FEBRUARY, 1954

Products Finishing

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Finishes on *Metal* Products

LEA newsreel

FEBRUARY 195

LEA COMPOUND

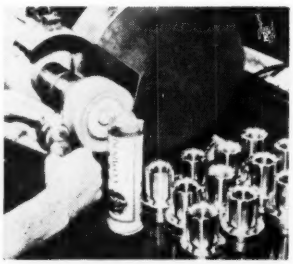
A greaseless composition for polishing, buffing, burring and satin finishing.

Lea Compound is a greaseless composition containing an abrasive or mixture of abrasives bonded together with glue. When applied to a revolving wheel sufficient heat is generated by friction to cause the compound to melt and be transferred to the wheel. Almost immediately it dries or sets up, forming a dry, abrasive-coated wheel with a flexible surface. The use of Lea Compound provides a short cut between polishing and buffing, eliminating polishing wheels in the finer numbers and

rendering easier the job of buffing and coloring.

Lea Compound is not limited to rigid polishing wheels but can be successfully applied to cloth, leather and string wheels of any degree of flexibility. On sewed muslin buffs, pocketed buffs, full-disc loose buffs, packed buffs and string wheels, a degree of flexibility never approached by the conventional set-up wheel is available to the operator.

While the abrasive grains are held securely to the surface of the wheel, the extreme flexibility of the wheel combined with the thin layer of abrasives avoids holding the grains in a rigid position. Therefore, they do not cut as deeply into the surface as grains of a set-up wheel would. Flexibility of the Lea Compound wheel cushions the cutting action of the abrasive grain, whereas with conventional polishing wheels this effect can be obtained only by the use of excessive lubrication.



LEAROK

A no-free-grease buffing composition for high lustre or mirror finishing. A special process developed by Lea Technicians has resulted in the production of Learok buffing and coloring compositions containing no-free-grease. This process of manufacture enables the production of compounds differing materially from the ordinary type of buffing and coloring compositions which contain excessive amounts of grease not absorbed by the abrasive powders. Having no-free-grease to transfer back from the work, the use of Learok eliminates the necessity of scrubbing or excessive cleanings.

Savings are particularly noticeable when work containing contours, ornamentations or filigreed decorations is being buffed, or when work such as drawn shells, which must be handled on chucks, is being finished. Learok may be used on such materials as aluminum, brass, carbon steel, copper, hard rubber, nickel alloys, pewter, plastics, stainless steel, sterling silver, etc.

OTHER LEA PRODUCTS INCLUDE

LEA LUBAR . . . a bar form lubricant for polishing wheels and belts where glazing is not a problem.

cLEAn GRAIN LUBAR . . . a special bar form lubricant to eliminate glazing on polishing wheels and belts.

LEA LIQUALUBE . . . a water soluble liquid lubricant for polishing wheels and belts; can be sprayed or brushed on.

AD-LEA-SIVE . . . glue base adhesive for sizing buffing and polishing wheels and belts prior to the application of Lea Compound.

LEABRAMENT . . . greaseless, non-flammable quick drying liquid abrasive, for burring and polishing; can be sprayed or brushed on the wheel.

LEA LIQUABRADE . . . clean working, fast cutting and mirror finishing liquid buffing compounds providing in effect continuous operation and substantial economies in composition and buffs; clean and safe, non-inflammable non-explosive; many abrasive types and grain sizes for all ferrous and non-ferrous metals steel, stainless alloys, or plastics.

LEA SYNSTRIP . . . a high speed liquid stripper for synthetic enamels and other organic coatings; leaves non-ferrous surfaces smooth no etching.

LEATARDENT . . . anti-stain, dipping emulsion prevents staining and tarnishing of plated surfaces.

LEA ANALYTICAL METHODS . . . platers' short cut methods for analyzing plating solutions

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matching the high quality of other Lea Products, is now obtainable through
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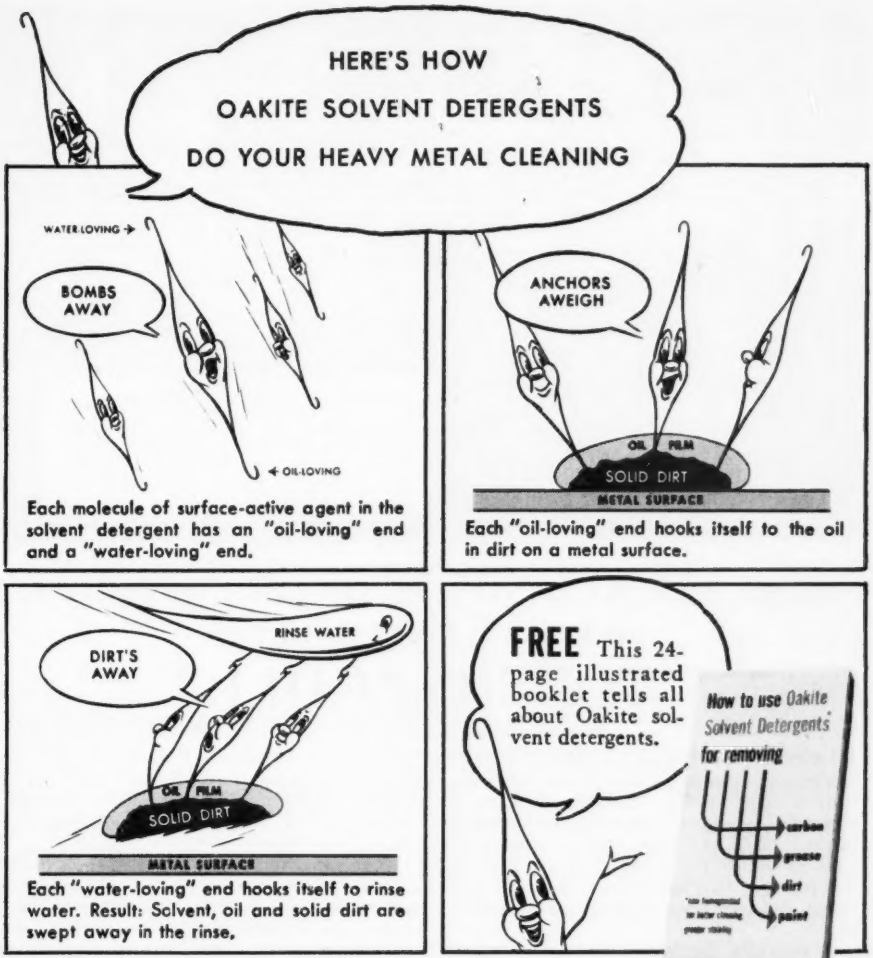
HERE'S HOW
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Each molecule of surface-active agent in the solvent detergent has an "oil-loving" end and a "water-loving" end.
ANCHORS AWEIGH
OIL FILM
SOLID DIRT
METAL SURFACE
Each "oil-loving" end hooks itself to the oil in dirt on a metal surface.
RINSE WATER
DIRT'S AWAY
OIL FILM
SOLID DIRT
METAL SURFACE
Each "water-loving" end hooks itself to rinse water. Result: Solvent, oil and solid dirt are swept away in the rinse.
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Oakite solvent detergents help you remove drawing and buffing compounds and other thick, heavy, stubborn oils and greases. They offer economy, safe cleaning for all metals, rust prevention, reduction of fire hazards.

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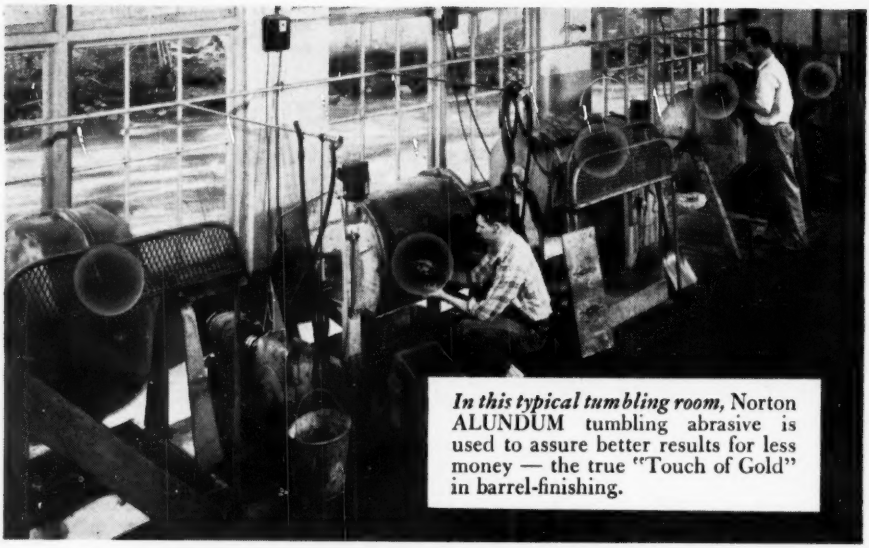

In this typical tumbling room, Norton ALUNDUM tumbling abrasive is used to assure better results for less money — the true "Touch of Gold" in barrel-finishing.

Start with ALUNDUM* tumbling abrasive . . . and you'll finish with the "TOUCH of GOLD"

Especially developed to eliminate hand finishing of stampings, forgings and castings, Norton ALUNDUM tumbling abrasive is processed to impart a strong, blocky shape to the individual grains, with no sharp projections to mar the work. Here are some of the reasons why barrel-finishing with this tough, hard abrasive is standard in leading plants:

- It provides the fastest, most economical method of finishing metal parts to exact dimensions and surface finishes.
- It removes burrs, flash, tool marks and heat scale from large quantities of parts, saving endless man-hours.
- It eliminates many slow hand-finishing operations, increases production rate of parts ranging in size from tiny needles to hefty castings.

Learn how ALUNDUM tumbling abrasive can bring *you* the value-adding, cost-cutting "Touch of Gold" — by giving you constantly better finishing results while helping you shorten tumbling cycles, reduce scrap and reworking. Whether or not you have barrel-finishing, Norton will gladly make test runs for you, to show you what this process with ALUNDUM tumbling abrasive will do for you.

See your Norton Distributor, and ask him for the new edition of the 55-page booklet on barrel-finishing. Or write to NORTON COMPANY, Worcester 6, Mass. Distributors in all principal cities, listed under "Grinding Wheels" in your classified phone directory. *Export:* Norton Behr-Manning Overseas Incorporated, Worcester 6, Mass.

G-266

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ABRASIVES

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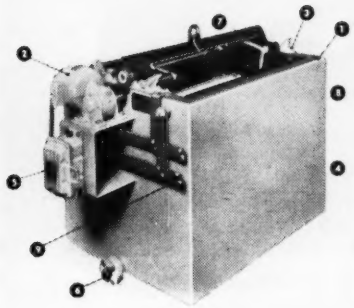
NOW . . . this improved
H-VW-M Mercil-Type Plating Tank
with Submerged Cylinder

plates faster
reduces maintenance cost
permits larger loads

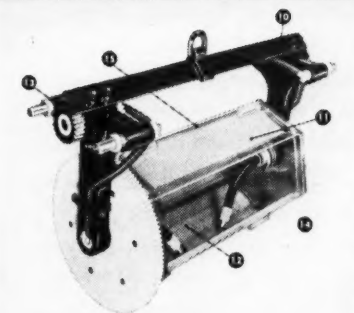


by combining *all* these features for better barrel plating:

1. **TURNED-IN FLANGES**—save space, provide enclosure for hanging heating and cooling coils.
2. **RELOCATED, MORE COMPACT MOTOR DRIVE**—drive shaft *now* above solution level, preventing leakage through shaft openings in tank walls.
3. **REDESIGNED SADDLES**—make barrel positioning far easier.
4. **NO OVERFLOW TROUGH**—not essential with this improved design, saves space inside tank.
5. **PUSH-BUTTON TYPE MOTOR STARTER**
6. **BOTTOM DRAIN**
7. **COIL RISERS**—extending over top of tank.
8. **ANODE RODS**—2 for each cylinder on both single and multiple units.
9. **BUS BARS**—positive and negative on *each* end of tank for equal current distribution.

These *improved* tanks are constructed of ¼" double-welded steel plate in 2 sizes, 14" x 30" I. D. (224 gal.) and 14" x 36" I. D. (252 gal.). For acid solutions, tanks are lined with ⅛" vulcanized rubber or plasticized PVC. For cyanide solutions, rough-wire glass is used in back of anodes. Finish is rust-resistant grey enamel with black trim.

TOGETHER, *They Form the Ideal Combination for Better Barrel Plating!*



10. **IMPROVED HANGER ASSEMBLY**—now made of rigid angle-iron, improved to insure proper barrel alignment.
11. **ONE-PIECE PANELS**—Plexiglas: ½" thick, no ribs. Melamine: ¼" thick, ribbed.
12. **CONVEX TUMBLING SURFACES (Plexiglas only)**—for added strength, easier tumbling action.
13. **MELAMINE BUSHINGS**—for insulating bronze hanger pins.
14. **EASY LOADING & UNLOADING**—cover with handle in panel area is easily reached at all times.
15. **SECURE BONDING**—all molded parts firmly bonded with cement and monel screws.

These *improved* cylinders are available in either Plexiglas, for temp. to 180°F., or Melamine, for temp. of 200-210°F. (Melamine has excellent resistance to abrasion). Hexagonal in shape, with 1" thick heads and special convex (Plexiglas only) one-piece panels, they are designed for greatly reduced maintenance cost and engineered for use *completely submerged* . . . with outstanding results: more consistent plating, 20% higher load capacities, 25% faster plating. And, in zinc baths, total submersion minimizes chance of spark igniting gas above bath.

For complete information on improved H-VW-M Mercil-Type Tanks and Cylinders ask for Bulletin PB 109.

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Polishing by hand is hard and slow work. With a Hammond Junior Automatic the operator merely loads and unloads, resulting in high production and uniform finishes throughout the day.

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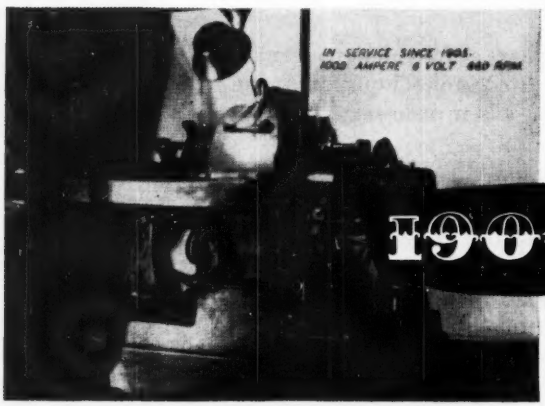

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One of the early Chandeysson generators still in use.

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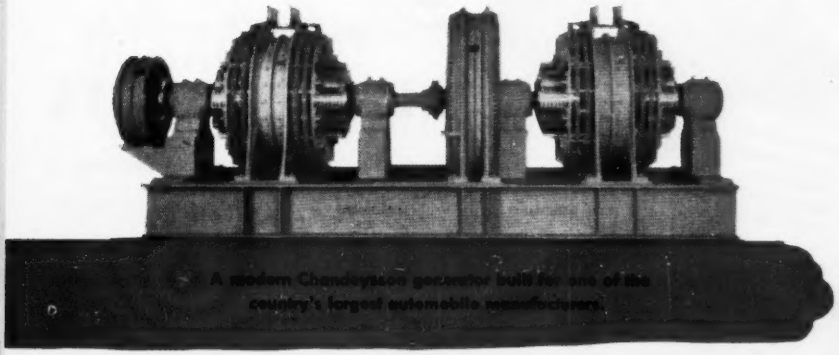

A modern Chandeysson generator built for one of the country's largest automobile manufacturers.

During all these 50 years, quality has never been compromised in a Chandeysson product. Only the best in materials and workmanship could create generators with such high quality that some of the original generators are still giving satisfactory performance today.

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Typical applications include builders' hardware, vanity and cosmetic cases, lipstick shells and pen caps.

Where decorative color effects are desired on metal, DURACHEM can be supplied in a range of colors with the same chemical stability as the clear finish.

Samples and technical literature are available on request. Or an M & W technical consultant will discuss your requirements privately with you.

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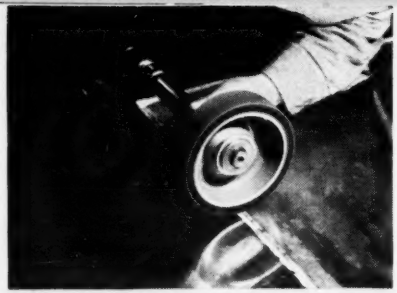

The CONE-LOC Drum Sander is ideally suited for flexible shaft work.

There are no shoulders to keep you from sanding in corners.

Polishing costs hit bottom when you use coated abrasive strips cut from Abrasive Rolls by CARBORUNDUM with the CONE-LOC Drum Sander—a light, balanced, safe polishing wheel ideal for use on flexible shaft tools or stationary bench grinders. The abrasive strips are held securely around the wheel by the hinged halves, when the arbor nut is tightened against the locking cone washer. The assembled wheel performs the same as a solid wheel—cuts smoothly... is perfectly balanced... *never* bounces at the joint. Worn abrasive strips are replaced in seconds.

Compare the abrasive costs: Reheading a setup wheel 6½″ x 1″ costs approximately 21 cents. An abrasive belt of the same area costs up to 17 cents. A 22″ strip of Metal Cloth, Industrial Cloth, Resin Industrial Cloth, or Waterproof Cloth—cut from a 1″ Abrasive Roll by CARBORUNDUM—costs you *5 cents or less.*

CONE-LOC Drum Sanders are equipped with rubber or felt cushions for smooth, even cutting. A sturdy backing flange is part of the assembly... insures extra strength and safety. Distributed exclusively by The Carborundum Company.

CALL YOUR CARBORUNDUM DISTRIBUTOR OR SALESMAN today. Find out how you can use coated abrasives to do a better polishing job... faster ...at less cost. Look for the CARBORUNDUM Trade Mark under "Abrasives" in the yellow pages. Or send this coupon.

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COMPANY _____

STREET AND NUMBER _____

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REGISTERED TRADE MARK

...continually putting more [redacted] in your abrasive [redacted]

82-43

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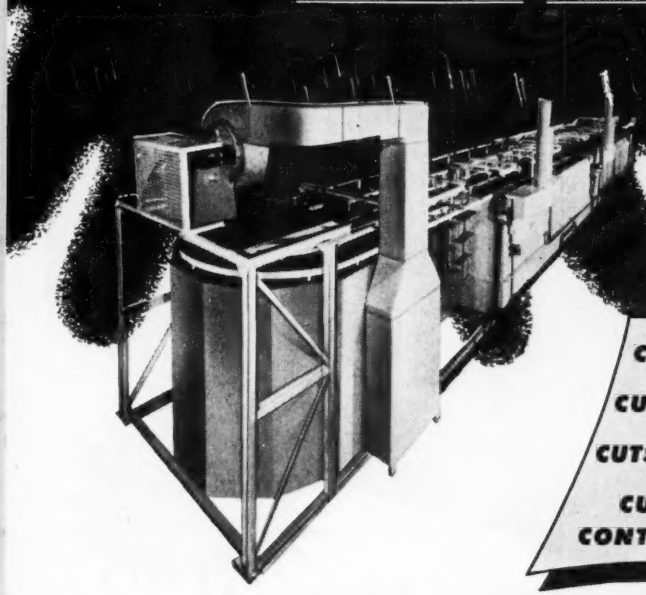


CUTS LABOR COST

CUTS POWER COST

CUTS SPACE NEEDS

CUTS TANK CONTAMINATION

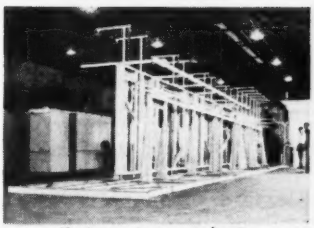
This brand new, fully automatic electroplating machine, under engineering study for years, its details in the testing laboratory for months, is now thoroughly proven in continuous production operation.

Powered by one electric motor, it uses less than half the power required for any comparative automatic plater. Fully hydraulic in control and operation, it has achieved new goals in versatile, smooth, trouble free, easily maintained, quiet, efficient operation.

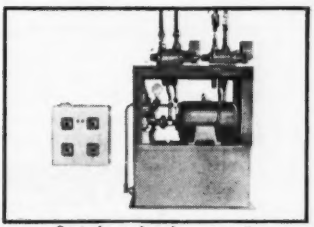
Built in sections for easy transportation and installation, it is a compact unit taking minimum floor space. It can be installed in a corner against two walls and a model using 48-inch racks can be operated under a 12-foot ceiling. All driving and actuating parts are readily accessible for adjustment. No greased parts or hydraulic fittings over tanks. Central lubrication. Automatic heat control. Double contacts on cathode bars.

And, dozens of other outstanding features.

Call in your local Wagner representative or write or wire direct for complete information on this completely new approach to plating automation.



Moving parts in central unit



Control panel and power unit

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"Multi-Burnish" can be used with almost any metal, and with all types of barrel finishing media. It is completely soluble, making for free rinsing. Parts *always* come out with a high luster and clean surfaces.

New HONITE "Multi-Burnish" can *cut your burnishing costs in half* because it does the work of three or four ordinary barrel-finishing compounds, *and* produces brighter surfaces faster than ever before possible!

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☐ Send me free copy of booklet "Barrel Finishing Manual" which contains complete information about HONITE barrel finishing compounds.

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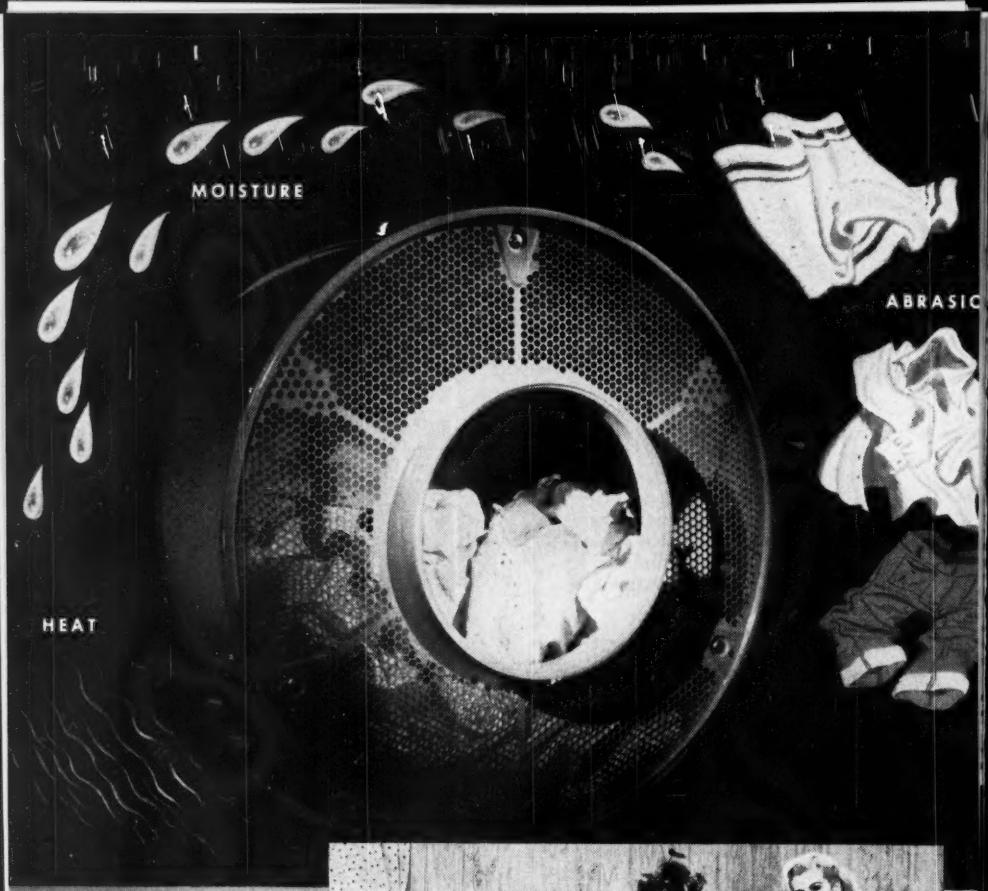

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The finish on the drum of the new Caloric gas dryer must withstand extreme moisture, heat and severe abrasive action. To meet these attacks, and to solve problems in the finishing of their new unit, Caloric Stove Corporation, Topton, Pennsylvania, called on Glidden Technical Service.

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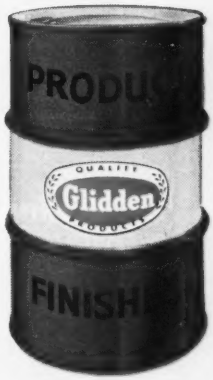
Tests proved that NU-PON offered excellent abrasion resistance to tumbling clothes, plus superior corrosion and heat resistance. In addition, the flexibility of NU-PON reduced damage in shipment, speeded production and lowered rejects. All these advantages justified Caloric's investment in a new synthetic finishing department.



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Cowles AA Compound controls acid fumes by **smothering** them. A **foam blanket** formed on the solution's surface keeps the fumes in the tank—where they belong! Acid strength is not reduced—AA actually **increases** pickling speed.

KEEPS BATHS CLEAN, RINSES FREELY

Cowles AA Compound keeps acid baths cleaner, speeds up soil breakdown, rinses freely and completely. AA can be added to any acids used in the metal pickling process.*

HELPS CONTROL TEMPERATURE

AA's **foam blanket** holds the heat in the tank, makes temperature control easier. Less steam is needed to reach and maintain workable temperatures. Just three ounces of AA to one hundred gallons of solution is the quantity usually needed.

STABLE, LONG-LASTING

Cowles AA Compound is a white, granular powder, dust-free and slightly acid. Added directly to the pickle bath, AA produces a stable, long-lasting **foam blanket.**

MAKES PICKLE ROOM "LIVABLE"

The **foam blanket** will stop the unpleasant, destructive fumes; will make your pickle room a pleasanter place to work in; will lengthen the life of your equipment; will save time and money in the pickling operation.

*When non-oxidizing acids are used consult your Cowles Technical Man.

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George B. Hogaboom — Electroplater Emeritus

On December 31, 1953, George B. Hogaboom, first president and honorary member of the American Electroplaters' Society, transferred his membership to the Society Eternal. Mr. Hogaboom, born on June 26, 1874, was almost 80 years old.

In every organization and industry there are those individuals whose names, thruout the years, become inseparably linked with that of the society or industry. In the electroplating and finishing industry and the American Electroplaters' Society, such a man was George B. Hogaboom. It would be difficult indeed to attempt to catalog all of his contributions to the electroplating industry. As a matter of fact, almost everyone active in the industry today has benefitted, to some degree at least, from Mr. Hogaboom's work.

George Hogaboom realized, early in his career, that the then-prevailing idea of secrecy in the plating room was wrong, and that the status of the electroplater and his operation could be raised only by education. Mr. Hogaboom's efforts in bringing increased knowledge of plating, stressing the importance of solution analysis, basis metal cleanliness, and sound plating practice, led to the writing, in collaboration with Dr. William Blum, of "Principles of Electroplating and Electroforming." This textbook, one of the leading books on electroplating, has run to three editions, and has been sold thruout the world.

Mr. Hogaboom was a frequent speaker before A.E.S. Conventions and branch meetings and carried on an extensive correspondence. He was always available for consultation by the plater with a problem. Indicative of his attitude toward his chosen field are his opening remarks before the 36th A.E.S. Convention in 1948. He addressed the group as, "my friends and associates in this most challenging and intriguing business of electroplating."

While it was not my privilege to know George Hogaboom for many years, it was my pleasure to know him quite well, and to enjoy frequent association with him.

During my recent period of military service in Japan, Mr. Hogaboom corresponded with me frequently, and wrote letters of introduction for me to leading Japanese electroplaters and scientists, who knew of him through his writings. This led to an unforgettable experience on my part; namely, making the acquaintance of a number of Japanese electroplaters, and visiting a number of plating plants.

Never one to seek personal honor or glory for his contributions to the knowledge and practice of electroplating, Mr. Hogaboom rather sought to keep himself in the background. His attitude is well stated in this quotation from personal correspondence, "One of the best of honors bestowed upon me is that of having members of the A.E.S. in branches and at national conventions call me by my first name. That means that I am one of them..."

In Mr. Hogaboom's passing, his beloved A.E.S. and electroplating industry have sustained a great loss. He leaves us richer, however, by his many contributions to the advancement of the industry, and by his attitude toward his work. He expressed it this way in a letter, "As for what has been done, my motto is, 'Silver and gold have I none, but such as I have, I give freely unto thee'."

Few indeed can equal his accomplishments, but all may well aspire to his example of unselfish service.

Ezra A. Blount

—EDITOR

Conveyor Speeds Vacuum

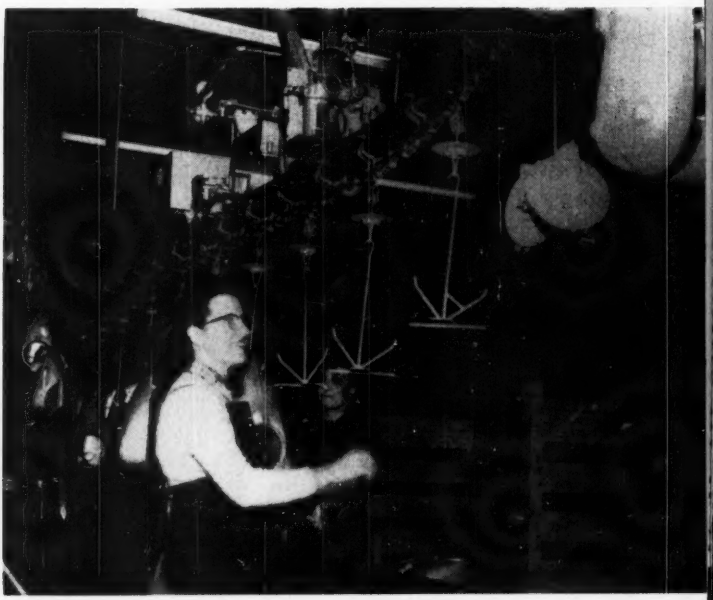

Fig. 1 — Two employees hang the vacuum cleaner housings on the finish conveyor line.

By MILTON G. THOMAS
Chief Industrial Engineer
Interstate Engineering Corporation
El Segundo, California

THE greatest of industrial production stories are the most simple stories to tell, for production at its best is a smooth-flowing straight-line operation that moves along steadily.

The one industrial innovation that has contributed most toward this oil-flow smoothness is conveyorization.* Today, conveyors set the pace of industry. In many cases, production speed is controlled by a pushbutton on the conveyor control panel.

A fine example of conveyorization at its most efficient peak can be found in the finishing and assembly department at Die Cast Engineering Corpor-

* See "Conveyor Applications in the Finishing Industry," Arthur P. Schulze and Frank L. Bonem, PRODUCTS FINISHING, April and May, 1952; and "Converyorize for Profit," PRODUCTS FINISHING, April, 1952, p. 21.

Cleaner Finishing

ation, Anaheim, California—a subsidiary of Interstate Engineering Corporation. This company produces two nationally known brands of vacuum cleaners, the "Compact" and the "Revelation." By using efficient conveyorization, five key employees can finish enough vacuum cleaner housings to supply this national market.

Though in operation only a few months, the new plant is already keyed to conveyorized production. The Jervis B. Webb conveyor system, a 465-foot-long continuous type, was designed by the industrial engineering department at Interstate Engineering Corporation under the direction of William Kunke. The housings and lids to be finished are suspended on specially designed hangers as shown in Fig. 1. Swivel-mounted discs (also visible in Fig. 1) spin the parts through the paint booth and baking ovens by making contact with friction plates mounted parallel to the conveyor chain.

In normal production, conveyor speed is 4½ feet a minute, with a finishing rate of 120 complete vacuum cleaner housings an hour. The conveyor has a range from 3 feet to 9 feet per minute.

Two employees hang and position the die cast aluminum housings on the conveyor chain. These housings have been pre-drilled, using a cutting oil, so thorough cleaning is necessary. The conveyor arcs upward after leaving the loading station, then dips downward through the huge automatic trichlorethylene Blakeslee degreasing unit shown in Fig. 2. This unit

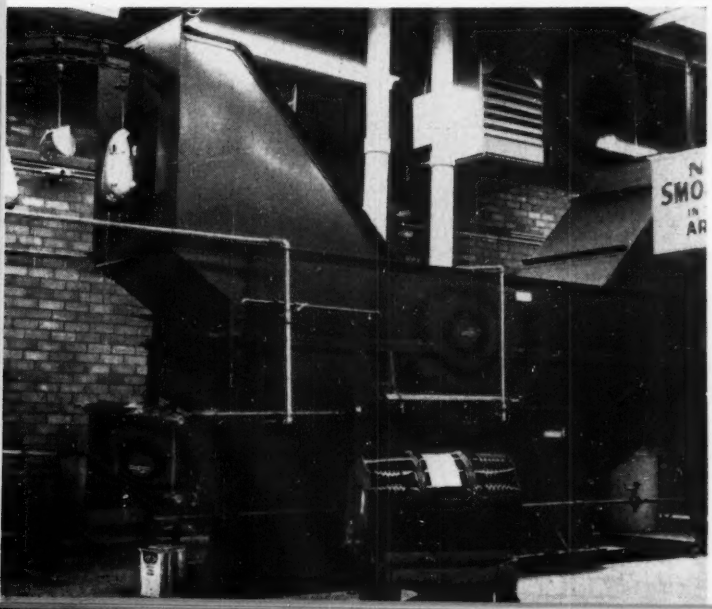

Fig. 2 — Cleaning prior to painting. The parts travel through the Blakeslee automatic degreaser, operated with vapor temperature at 188 deg. F.

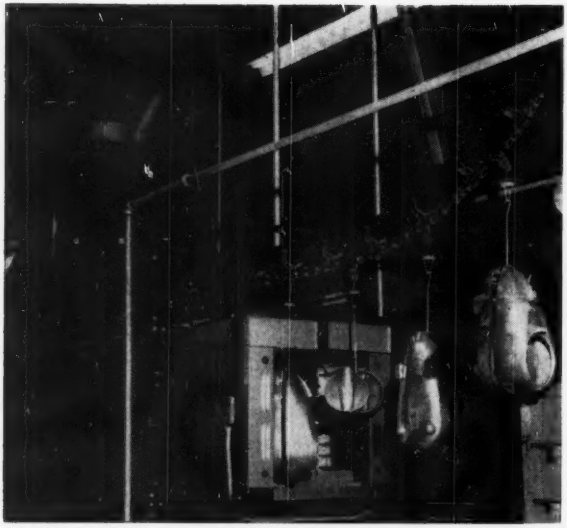

Fig. 3—After cleaning, the parts are conveyed through this infra-red type pre-heater to pre-heat them for the application of the hot wrinkle paint.

maintains a constant vapor temperature of 188 deg. F., and requires very little attention except for periodic solution checks and sediment cleaning. Consequently, this constitutes an automatic degreasing cycle.

After leaving the degreaser, the conveyor carries the cleaned housings, downward and into the "Chromolox" infra-red pre-heating unit shown in Fig. 3. Here the housings are pre-heated to 250-300 deg. F. in preparation for application of the hot wrinkle paint. The parts leave the pre-heating unit and enter directly into the paint booth through an opening in the spray booth wall. This minimizes any heat losses between the pre-heater and actual paint application.

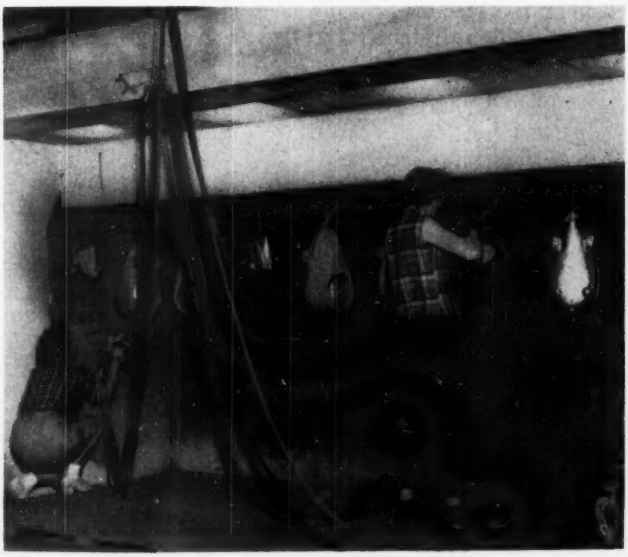

Fig. 4—Applying the hot wrinkle paint in the De-Vilbiss water-wash paint booth. Parts rotate as they are conveyed in front of the water curtain.

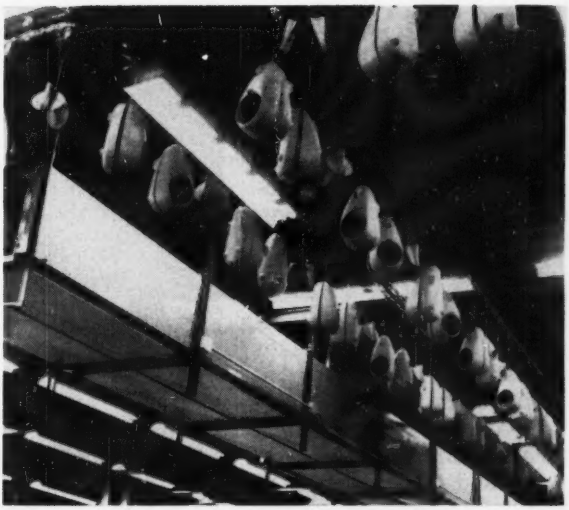

Fig. 6—After painting, the parts travel through this 50-foot ceiling level double baking oven in a U pattern, with 100 ft. of part travel in the hot zone. After leaving the oven, the parts are cooled on another U section of the conveyor.

Under normal production conditions, two painters work in the paint booth. The housings are turned by the swivel discs on the conveyor hangers as they travel through the booth, thus exposing all sides to the painter (Fig. 4). The wrinkle paint is pre-heated to 180 deg. F. prior to spraying to reduce its viscosity and minimize overspray. This pre-heating is accomplished in the Bede recirculating type paint heater shown at the extreme right in Fig. 5. The two 30 gallon DeVilbiss pressure tanks shown at the left in Fig. 5 are filled once each day to supply normal paint requirements. This setup is directly adjacent to the paint booth to minimize paint heat losses through the pressure hoses leading to the spray guns.

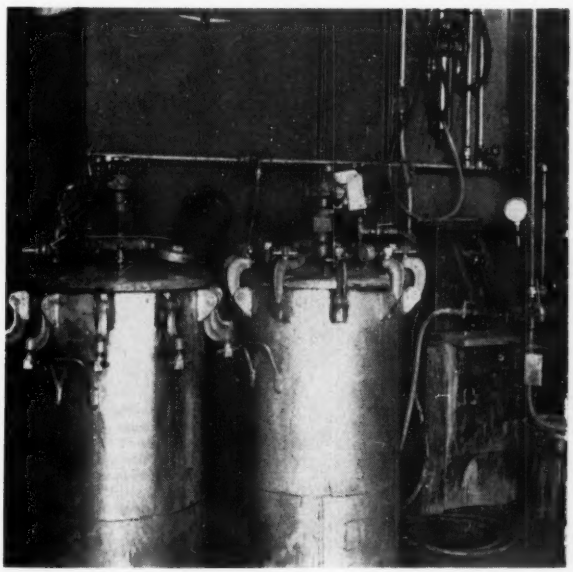

Fig. 5—These two 30 gallon DeVilbiss pressure tanks, replenished daily, supply the wrinkle paint to the Bede recirculating type paint heater visible at the extreme right. Hot paint is applied at 180 deg. F. This reduces viscosity, makes for a more even coating, and minimizes overspray.

After the housings leave the paint booth, they are carried up-

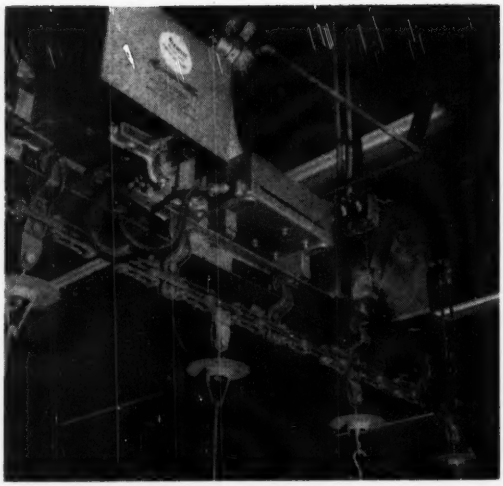

Fig. 8—This automatic conveyor lubricater assures smooth, wear-free operation.

ward to ceiling level, then into a 50-foot double Production Equipment Company baking oven shown in Fig. 6. Infra-red baking temperature of approximately 250 deg. F. is maintained. The conveyor makes a U-turn within this oven, so travel is 100 feet in the hot zone. Baking time is about 20 minutes.

Beyond the baking oven, another U-turn conveyor section is used as the cooling cycle. Parts require about 20 minutes to travel through this cooling zone in order to reach room temperature, then descend to floor level where they are removed from the hooks and placed directly on a roller conveyor (Fig. 7) to start along the assembly line. Total time of each part on the line is about 90 minutes; two hours after the housings have been hung on the conveyor, they are assembled into a finished vacuum cleaner, packed in shipping cartons, and are ready to be shipped.

An interesting installation used on the Webb conveyor system is the automatic lubricating device shown in

Fig. 7—Here the painted vacuum cleaner housings return to floor level, are removed from the conveyor hooks (at extreme left) by the inspector, then placed on a roller conveyor to start along the production line (lower right).

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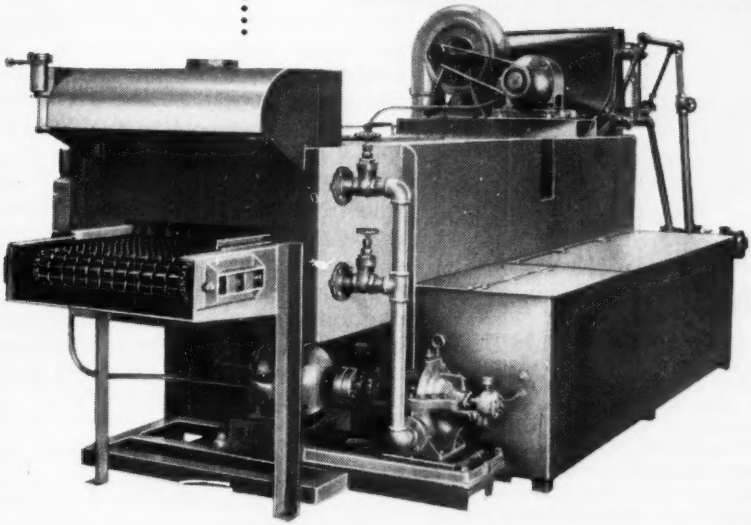

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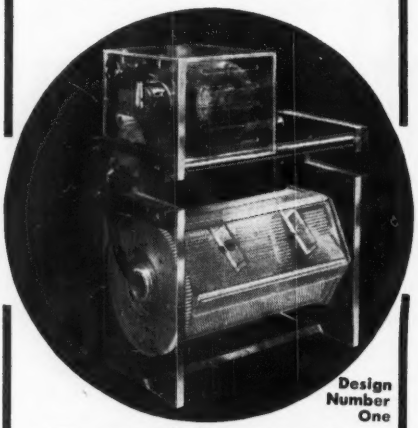

Design Number One

Portable Lucite Plating Barrel

THE STUTZ PORTABLE PLATING BARREL is designed and constructed of High Temperature Lucite to provide continuous processing of piece parts through the operations of Alkali Cleaning, Water Rinsing, Acid Treatment and Plating. Progression through these operations is made by manual handling or if necessary with the assist of an overhead traveling hoist. The STUTZ PORTABLE PLATING BARREL is made in two sizes with cylinders having inside dimensions of 6" x 12" and 8" x 18". Also in half the diameter, 3" and 4" respectively. Cylinder can be partitioned. Standard perforations are 3/32" or larger. Smaller openings can be furnished as required. All gears are ½" High Temperature Lucite. Gear bearings are permanently lubricated. New heavy duty motor. Operating temperature up to 185° F.

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Manufactured by

GEO. A. STUTZ Mfg. Co.

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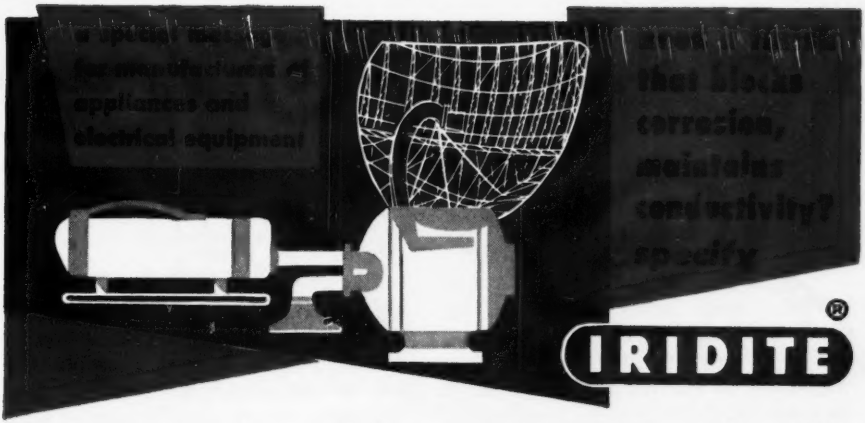
Fig. 8. The Alemite automatic oiler shown at the upper left has a pressure lubricating nozzle which is actuated by the passage of each conveyor roller. The nozzle device then moves inward and travels with the roller while grease is being forced into the bearing. At the extreme right center of the photograph, two small tubes direct an atomized oil spray on the swivel joints of the conveyor hangers. Frequent and consistent oiling of the conveyor is made necessary by its travel through the vapor degreaser which has a tendency to remove lubricant from the moving parts.

In overall perspective, the conveyorized finishing line in the new Die Cast Engineering Plant is as smooth running as Ol' Man River himself. The few rifts and turbulent sections that prevailed in the beginning have been smoothed out. Production as usual is the byword, and, within rational limits, a pushbutton on the conveyor control panel governs production speed.

Palladium, one of the precious metals of the platinum group, is important in both industry and the arts. It has many uses in electrical switching apparatus, as a catalyst in chemical processes, in dentistry, and in jewelry and adornments. These established uses are being further developed and new ones discovered.

Platinum, found originally in a region of South America that is now part of Colombia, was valued at less than silver by the Spanish colonists. They could not profitably separate it from gold nor could they melt or destroy it by fire. Today the price of platinum is about one hundred times that of silver.



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ON ZINC AND CADMIUM you can get highly corrosion resistant finishes to meet any military or civilian specifications and ranging in appearance from olive drab through sparkling bright and dyed colors.

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Flame Spraying Ceramics

By THOMAS A. DICKINSON

A FLAME spraying technique now being developed by Ryan Aeronautical Company, San Diego, Calif., is expected to permit the application of heat-resistant ceramic coatings on materials like aluminum, magnesium, and titanium as well as iron and steel products.

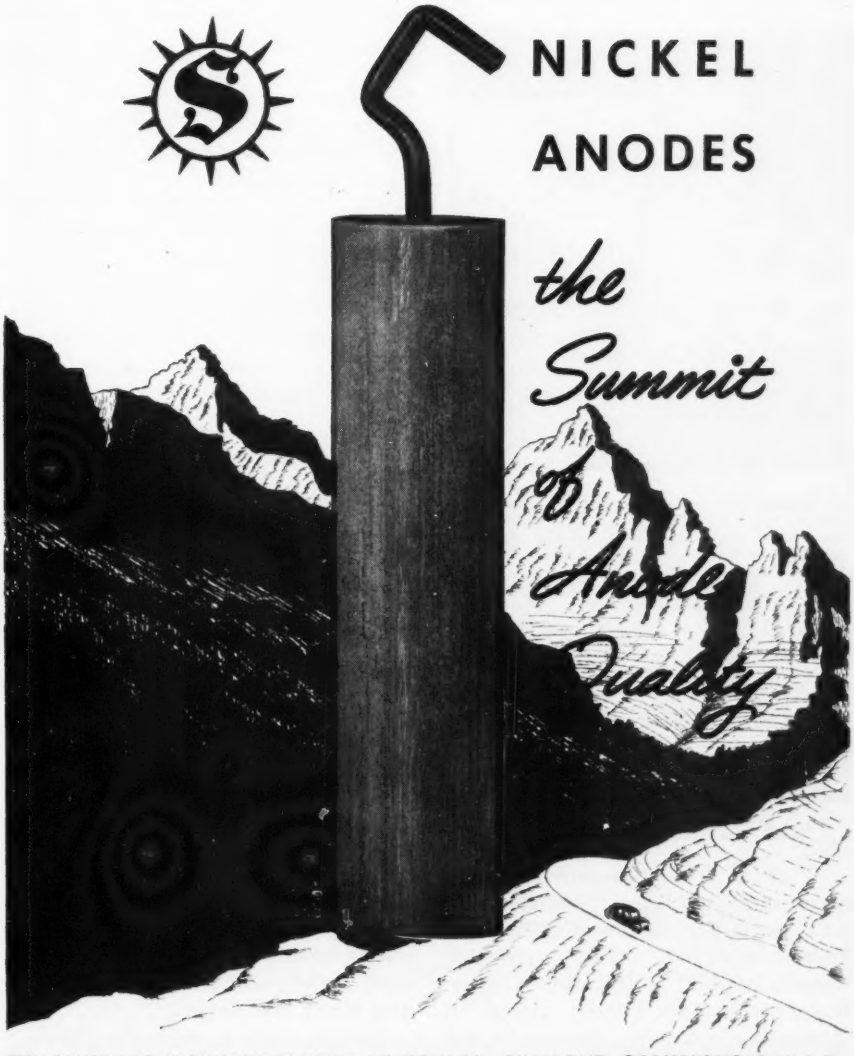
It consists briefly of pneumatically ejecting fine refractory powders through a flame with a spray gun of the type that has been developed for metallizing purposes by the Shori Process Division of Ferro-Co. Corp., New York. The powders are temporarily melted by the flame, so that they can be bonded to various metallic surfaces without causing any appreciable amount of oxidation.

The process makes possible the use of ceramics on materials that could not previously be coated with refractories.

It is unlikely that the process will replace conventional enameling techniques because flame-sprayed ceramic coatings normally have a rather rough texture, which would probably not be acceptable on many commerical products. However, such coatings are as good and perhaps better than standard ceramic finishes for strictly utilitarian purposes (that is, on components or products which must withstand extremely high operating temperatures) because they may comprise refractory materials with much higher melting temperatures than the metals to which they are applied.

Fig. 1—Ceramic coated exhaust headers are carefully mated with precision tools, as shown here, at Ryan Aeronautical Company.

SEYMOUR



THE SEYMOUR MANUFACTURING COMPANY • SEYMOUR, CONNECTICUT, U.S.A.

While they have definitely proved that ceramics can be flame-sprayed on materials such as aluminum and magnesium without damaging the metals, Ryan engineers do not consider their new process a completely

Fig. 2—Shown here is the burner setup which is used by Ryan to determine the thermal shock resistance of ceramic-coated components. The components are first heated to 1700 deg. F., then quickly cooled to —70 deg. F.
(Photos courtesy Ryan Aeronautical Co., San Diego, Calif.)

practical development because they do not yet have coating formulae which will make it possible to apply ceramic finishes with approximately the same thermal expansion coefficients as those of most metals on which such finishes would be desirable.

While it is now possible to bond a ceramic coating to the surfaces of an aluminum component, there is no known refractory coating that will remain bonded to aluminum when the materials are heated enough to expand appreciably. This would not be an objectionable feature in finishing products that merely require high chemical resistance at room temperature, but it does limit the use of ceramic coatings on articles that require extra heat resistance.

At present, the only refractory finishing materials that are known to be suitable for use on metals which must withstand high operating temperatures are A-19, A-417, and A-418 compositions developed by the National Bureau of Standards. These materials are suitable for finishing low-carbon steels, stainless steels, Inconels, Haynes Stellite N-155, and Hastelloy C.

However, Ryan engineers seem to be confident that research will eventually yield oxide combinations which will satisfactorily impart added heat resistance to virtually all metals.

Materials to be finished with flame-sprayed ceramics are cleaned and sand blasted or chemically roughened in a conventional manner, prior to the application of ground and cover coatings.

Ground coatings are built up slowly by making a series of rapid passes over a surface area which is usually not more than a yard square, in order to avoid the excessive heating of deposition surfaces. Cover coatings are applied with about the same speed as metal-spray finishes.

Separate ground and cover coatings are normally applied in order to get maximum adhesion and desired color effects. However, it is entirely possible that future developments will yield ceramic compositions which will serve both ground and cover purposes.

Unlike metals, ceramic powders have no tendency to undergo a

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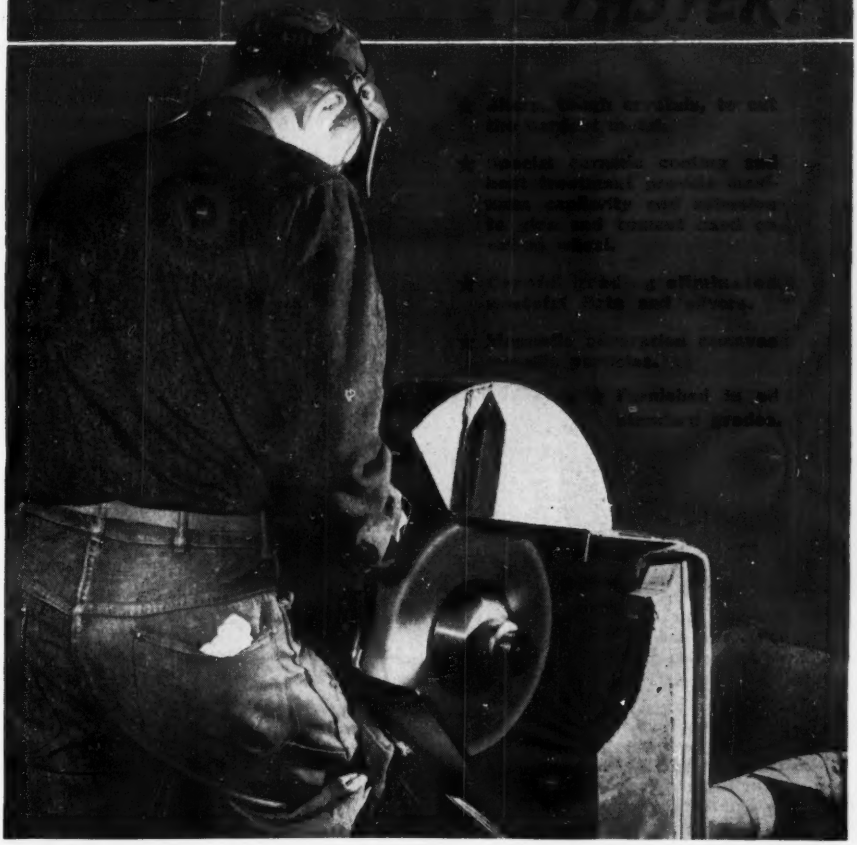

You can't buy a better abrasive than EXOLON. Its hardness and uniformity guarantee the finest possible metal finishing job. You'll save on labor and production time by using the best. And the difference in the finished job will make you wonder why you ever used inferior, false-economy abrasives. Get the complete story today. Write EXOLON for full information.

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change in composition when they are flame-sprayed in open air because they are oxides from the start. Further, because they are chemically inert, ceramic coatings will not ordinarily promote oxidation or corrosion in metals to which they are applied.

The primary purpose of ceramic coatings used by Ryan and other aircraft manufacturers at present is to conserve critical materials—for example, by permitting the use of mild steels in place of stainless steels where the heat resistance (but not the mechanical strength) of the latter is essential. However, in view of the fact that ceramics can be flame-sprayed almost as economically and efficiently as solvent-dispersed coatings, it seems at least probable that refractory finishes could be used with success for certain low-temperature applications.

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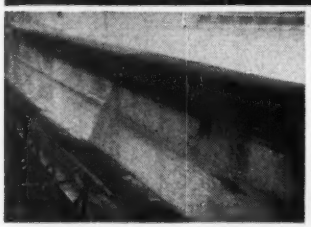
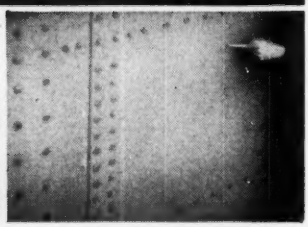
VINSYNITE PRE-TREATED STEEL TEST PANEL

Rates Tops in Rust Resistance



Steel-plate lift gate of Emsworth Dam, Ohio River near Pittsburgh. Twenty-five coating systems are under continuing test.



Close-up of gate section treated with Vinsynite-Vinyl System. Note comparative absence of rust and corrosion.

In the continuing Corps of Engineers test shown above, Vinsynite-Vinyl and twenty-four other systems were under observation. After three years constant submersion the Vinsynite-Vinyl panel was voted outstandingly superior for protecting the metal.

If you have a corrosion problem, either in maintenance or in finishing any type of metal products, it will pay you to check the advantages of Vinsynite. Applied easily by brush, spray or dip, Vinsynite forms a perfect protective base for other paints. Let us send you specific test data and case histories to prove it!

SEND FOR FREE LITERATURE

SPECIALTY COATINGS, INC., Division of THOMPSON & CO.

1010 Allegheny Ave., Oakmont, Pa.

Vinsynite

COMBINES PROTECTION AND ECONOMY

FURNACE AND OVEN CONTROL INSTRUMENT CATALOG. Published by **The Bristol Company,** Waterbury 20, Conn., **CATALOG No. P1255** features Electronic Dynamaster potentiometer and millivoltmeter type pyrometer controllers, recorders and indicators. Electric, air-operated and electronic control instruments for use with fuel-fired and electric heating equipment of all types are listed. Complete engineering specifications and prices are given. The catalog is liberally illustrated with diagrams of the various control arrangements, dimension sketches, and photographs.

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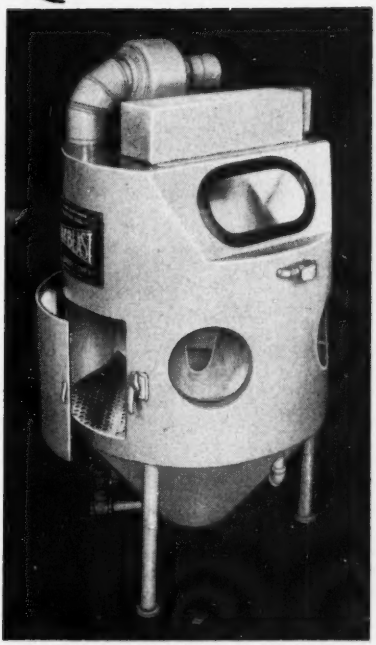
BETTER • FASTER • CHEAPER

NEW LOW COST BENCH MODEL

JET BLAST



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JET BLAST will give any desired finish on flat or irregularly shaped objects . . . Sharp edges are retained.

JET BLAST is excellent for light burring on hard to-get-at surfaces.

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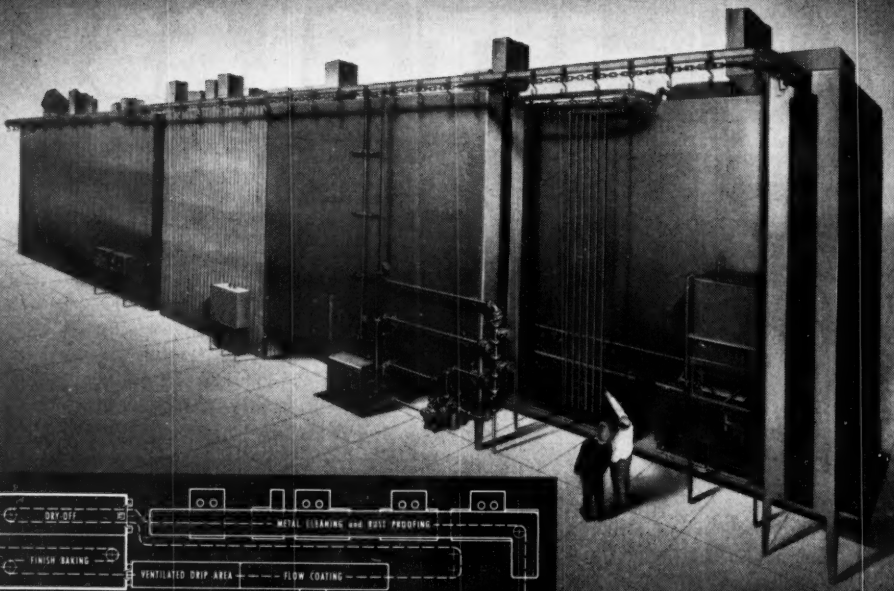

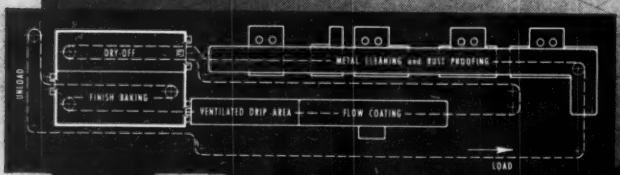

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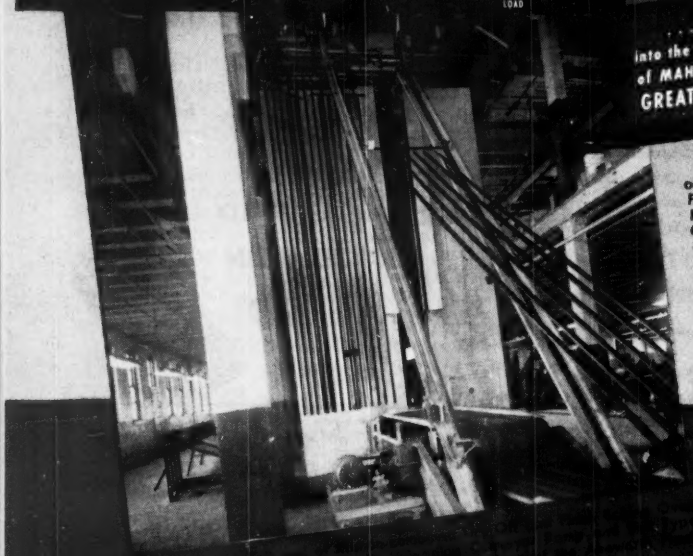
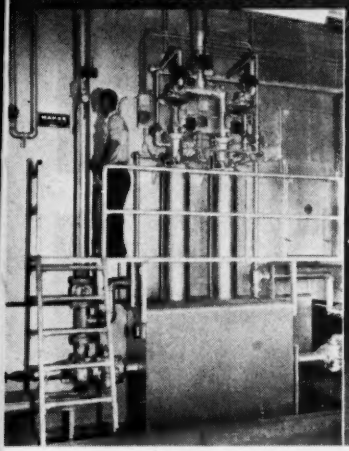


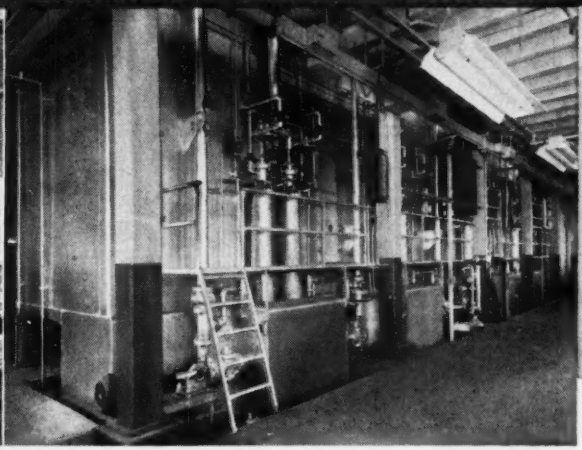
At Right Above: Mahon FIRE-JET Heating Units on the solution tanks of the Mahon Five-Stage Metal Cleaning and Rust Proofing Machine—part of the Complete Mahon Finishing System installed for the MULT-A-FRAME Division of Ainsworth Manufacturing Corporation, Detroit, Mich. Above: General view of the complete system with the building stripped from around it. Plan layout shows arrangement of equipment and sequence of processing operations.

M

Finishing SYSTEMS

. . . for ENAMELS • LACQUER • PAINT • VARNISH





Ainsworth MULT-A-FRAME Channels and Fittings are painted in a COMPLETE MAHON FINISHING SYSTEM!

When the MULT-A-FRAME Division of Ainsworth Manufacturing Corporation was confronted with a finishing problem, they turned to Mahon for the solution. The product is a box channel 20 ft. long with only a ½" slot in one side—these are cleaned, rust proofed and painted outside and inside. Two hundred channels are finished per hour. Thousands of Fittings, Concrete Inserts and other MULT-A-FRAME parts and accessories are also finished on the same line. The finishing equipment extends from a pit in the first floor to the second floor ceiling. Oven Heating Units, Recirculating Fans and Exhaust Fans are located on the third floor. Automatic loaders and unloaders, with ramp conveyors from the first floor, load and unload the main conveyor which is located 27'-5" above the first floor. This is another Complete Mahon Finishing System designed and built by Mahon to do a specific job efficiently and economically. If you have a finishing problem, or are contemplating new finishing equipment, you will find that Mahon engineers are better qualified to advise you on both methods and equipment requirements . . . and better qualified to do the all-important planning and engineering of equipment—which is the key to fine finishes at minimum cost. You will also find that Mahon equipment is built better for more economical operation over a longer period of time. Mahon's background history in this highly specialized field covers thousands of Complete Finishing Systems including Dip, Flow Coating and Spray Equipment for every conceivable product painted on a production basis. See Sweet's Plant Engineering File for complete information, or write for Catalog A-654.

THE R. C. MAHON COMPANY • Detroit 34, Michigan • Chicago 4, Illinois

Engineers and Manufacturers of Metal Cleaning and Pickling Equipment, Metal Cleaning and Rust Proofing Equipment, Spray Booths, Flow and Dip Coaters, Drying and Baking Ovens, and Complete Conveyorized Finishing Systems.

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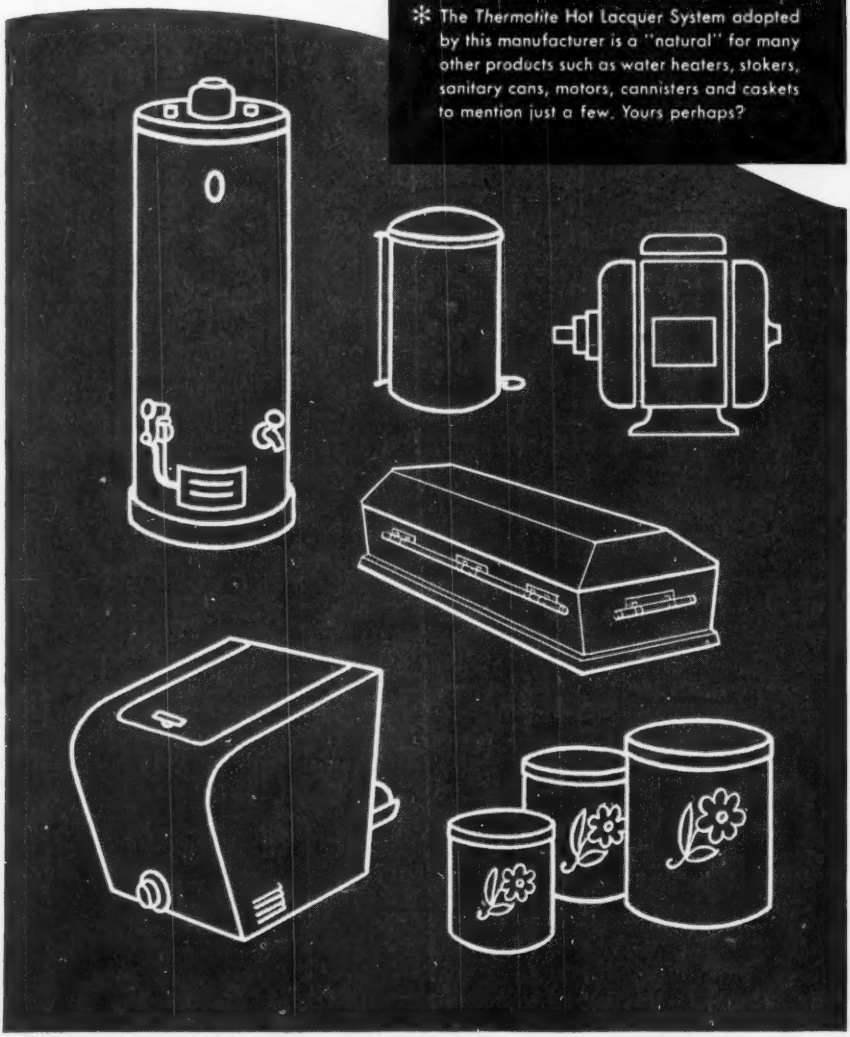
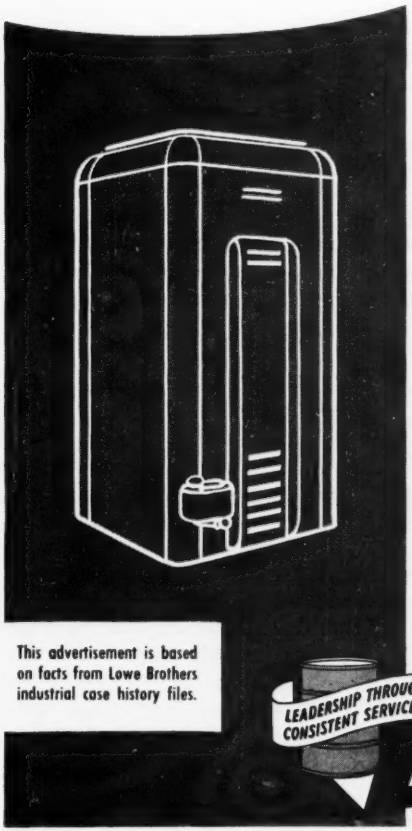
Eliminates 2 handling operations


* The Thermotite Hot Lacquer System adopted by this manufacturer is a "natural" for many other products such as water heaters, stokers, sanitary cans, motors, cannisters and caskets to mention just a few. Yours perhaps?

solves production bottleneck

by cutting drying time 600%

This manufacturer of gas and oil furnaces was using a finishing system which produced highly satisfactory results from every standpoint of gloss, adhesion, appearance and durability. It was necessary, however, to move finished parts from the line to a storage place for an hour's drying time before handling and packing—a costly production bottleneck. A Lowe Brothers "Finishing Specialist" recommended *Thermotite* as a means to eliminate this bottleneck yet retain all of the desirable characteristics of the finish used previously.



This advertisement is based on facts from Lowe Brothers industrial case history files.

NOW, with *Thermotite*, parts are dry, ready for packing within 9 minutes! Packing is done just as pieces leave the production line. No extra handling, no moving, no special storage, no costly bottleneck—just big savings!

BUT MOST IMPORTANT, the "hot application" method recommended by Lowe Brothers "Finishing Specialist" produces a finish with every desirable characteristic of the former system—good build, excellent adhesion, one coat application and a tough, durable high gloss film, free of marring!

MANY manufacturers have found it most profitable to have a Lowe Brothers "Finishing Specialist" check their finishing operations for possible improvement based upon thorough knowledge of the latest in modern systems and materials. How about you? No obligation—write today!

THE LOWE BROTHERS COMPANY • Dayton 2, Ohio
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LEADERSHIP THROUGH CONSISTENT SERVICE

Lowe Brothers
FINISHES FOR INDUSTRY

since 1870

Automatic Process Control in Metal Plating

By LEO WALTER, A.M.I. Mech. E.

BASIC knowledge of the design and function of automatic control instruments for pressure, temperature, rate of flow, liquid level, and other variable process factors is a prerequisite for their practical application.

Assuming that the reader is familiar with the most common types of temperature controllers, and with the use of less elaborate controllers for other variables, the following brief survey will deal with some practical considerations which the plant engineer must bear in mind when he has to decide how to apply automatic control to metal finishing or to processing of goods on a large scale.

Wherever heat or cooling is applied during processing there is a possibility of using automatic temperature regulators. The needs of the plating industry include the more extensive use of automatic controls for various process variables in order that the plated product shall be of uniformly high quality and that rejects shall be at a minimum. Process variables which can be controlled automatically include temperature, liquid level, pH, and rate of flow. Whether the control shall be simple or more elaborate depends upon the requirements of the process. Some installations require that facilities for both heating and cooling be installed in the same tank. In other cases, the installation of heating coils alone is sufficient.

Heating Methods

Steam Coil Heated Tanks.

Heat must be applied in the right way in order that good temperature control of steam coil heated tanks may be achieved. Before installing a temperature controller it should be determined that steam coil length and diameter are correct, that the coil has a steady slope in the direction of steam flow, and that the right type of steam trap is applied. It is highly recommendable that the coil be insulated from the steam mains and condensate line to prevent coil corrosion from the effect

The definite emergence of instrumentation—control, measuring and recording instruments—continued to be one of the significant developments in production techniques during 1953. Investments for such equipment made by industry as capital outlays has increased more than eight times over the prewar rate.

The return of competition on a price basis is expected to stimulate interest in and expenditures for instrumentation and automation in 1954 to reduce both overhead and unit production costs. . . . It is estimated that today at least half of the 304,000 manufacturing firms in the country utilize some form of instrumentation. . . . However, perhaps three-fourths of the manufacturing plants still do not have the basic control instruments they need.

(Excerpt from news release, Minneapolis-Honeywell Regulator Company, Brown Instruments Division.)

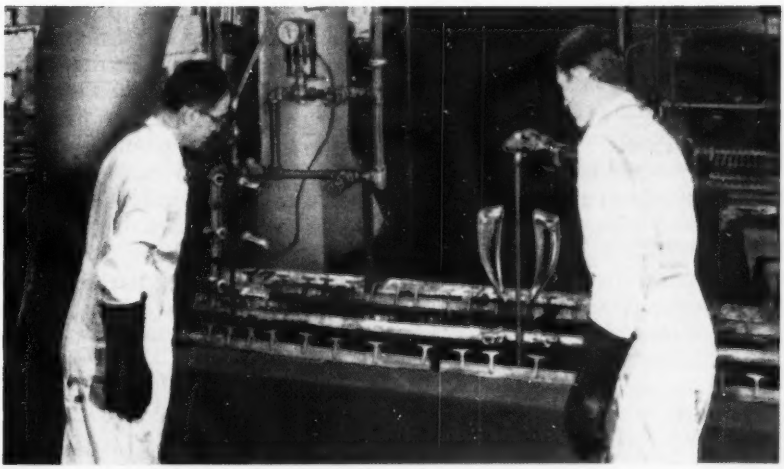


Fig. 1—Self-operating temperature regulator installed on a plating tank in the plant of Belmont Plating Co.
(Photo courtesy the Powers Regulator Co., Skokie, Ill.)

of stray currents in the piping system (Fig. 2).

External Heat Exchangers.

Heat exchangers (Fig. 3) have several advantages over heating coils. In large tanks it is difficult to avoid uneven temperatures when coils are used. The coils being in the working space are likely to become coated with deposits, and the supply and condensate piping may interfere with the working space

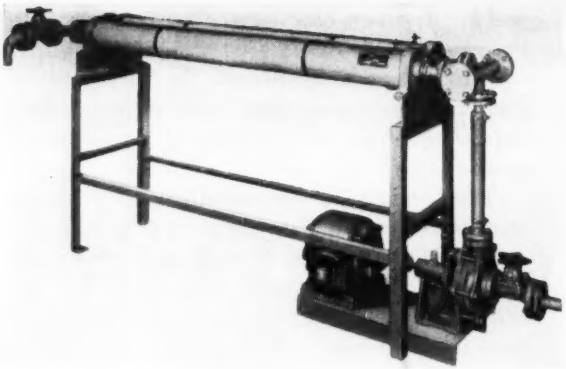


Fig. 3—Jacketed heat exchanger and pump for use in heating and circulating electroplating and other metal processing solutions.
(Photo courtesy Industrial Filter & Pump Mfg. Co., Chicago 50, Ill.)

around the tank. Heat exchangers and pump circulation of solution simplify filtration and provide more uniform temperature in the tank. Circulation assists the temperature controller to keep the operating temperature constant. The heat exchanger should be carefully chosen to give the required heat input, but should not be too big or temperature control may prove difficult. Float-thermostatic traps are the most suitable for heat exchangers.

Jacketed Tanks.

Jacketed tanks may be heated by direct steam injection or by heat exchanger. Heat exchangers for jacket water should be drained in the same way as tank heat exchangers.

Gas and Electric Heaters.

For some plating or metal processing solutions the use of electric immersion heaters is quite satisfactory (Fig. 4). When heaters of this type are used in larger tanks it is preferable to use a number of the heaters to be sure that tank temperatures will be uniform. Gas-fired immersion burners find application in heating large solutions such as alkali cleaners, pickling solutions, hot water tanks, and so on. Normally, heaters of this type are not used for heating electroplating solutions.

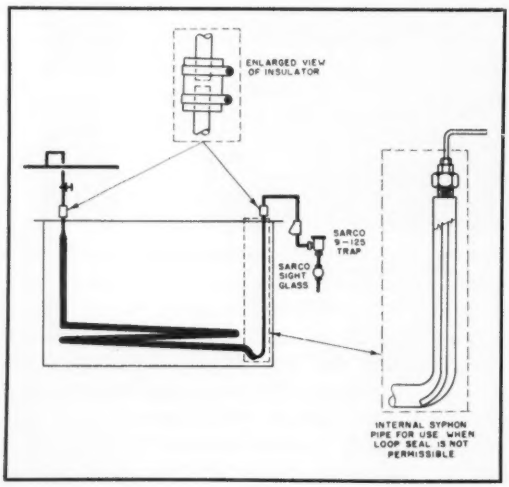

ENLARGED VIEW OF INSULATOR
SARCO 9-125 TRAP
SARCO SIGHT GLASS
INTERNAL SYPHON PIPE FOR USE WHEN LOOP SEAL IS NOT PERMISSIBLE

Fig. 2—Sketch showing elements of a steam coil heating installation for a plating tank.
(Photo courtesy Sarco Co., Inc., New York 1, N. Y.)

Temperature Control of Plating Processes

Temperature controllers

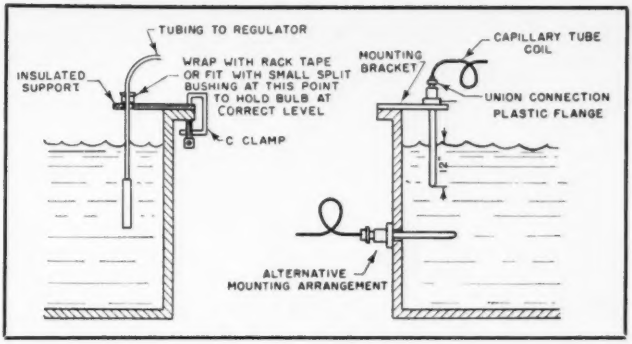

TUBING TO REGULATOR
CAPILLARY TUBE COIL
MOUNTING BRACKET
WRAP WITH RACK TAPE OR FIT WITH SMALL SPLIT BUSHING AT THIS POINT TO HOLD BULB AT CORRECT LEVEL
INSULATED SUPPORT
UNION CONNECTION PLASTIC FLANGE
C CLAMP
ALTERNATIVE MOUNTING ARRANGEMENT

Fig. 5—Details of thermostatic bulb installation, showing insulation of bulb from tank. *(Illustration courtesy Sarco Co., Inc., New York 1, N. Y.)*

●

can control the temperature only at the place where the bulb is installed. The relationship between the temperature at this point and the mean temperature of the tank depends on the amount of liquid circulation, the position and area of the heating surface used, the work being done and the current input. Some variation of temperature at different points is almost unavoidable unless a high circulation rate is employed.

Bulbs of temperature controllers should never be located near heating coils or where they are likely to be damaged by work passing through the tank. All controller bulbs in electroplating tanks, with the exception of those Koroseal covered or silica sheathed, should be mounted and supported by insulating brackets.

Bulb Materials.

Bulbs are available in many metals including copper, mild steel, stainless steel, monel and with lead or antimony lead coatings. In plating operations, however, there is the possibility of electrolytic corrosion caused by stray currents or plating solutions. One recommendation specifies Koroseal coated bulbs for temperatures not exceeding 160 deg. F., and a protective sheath of silica for higher temperatures. Figure 5 shows a number of recommended practices with regard to proper mounting or installation of the temperature regulator bulb.

●

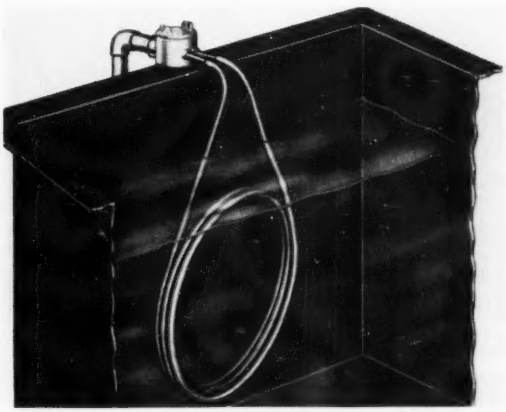


Fig. 4—A 5 k.w. immersion electric heating unit for electroplating solutions. The heater, which is simply hung over the side of the tank, has a thick lead sheath to resist corrosion. Terminals are protected by a moisture-tight housing, and separate thermostatic control can be obtained.
(Photo courtesy Edwin L. Wiegand Co., Pittsburgh 8, Pa.)

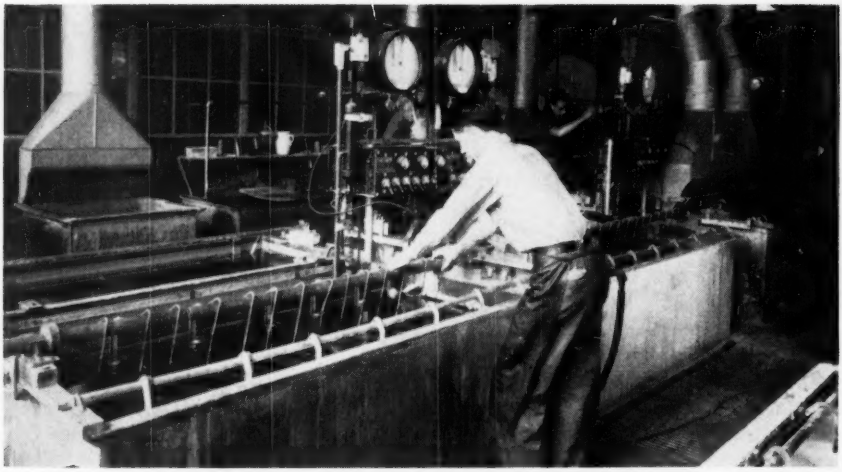


Fig. 6—Pneumatic on-off temperature controllers installed on alkaline tin plating tanks.
(Photo courtesy The Foxboro Co., Foxboro, Mass.)

Temperature Controller Types.

Various designs of temperature regulators are available to fill all the needs of the plating from simple, sefl-actuated regulators to electrically or pneumatically operated con-

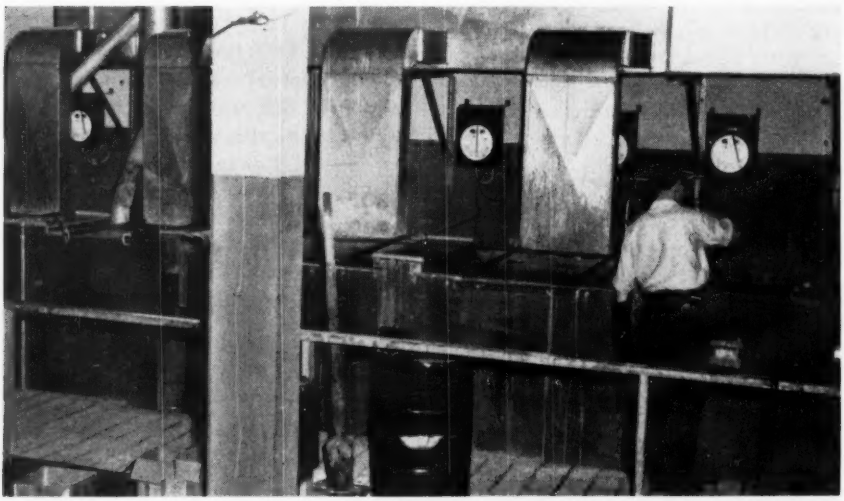
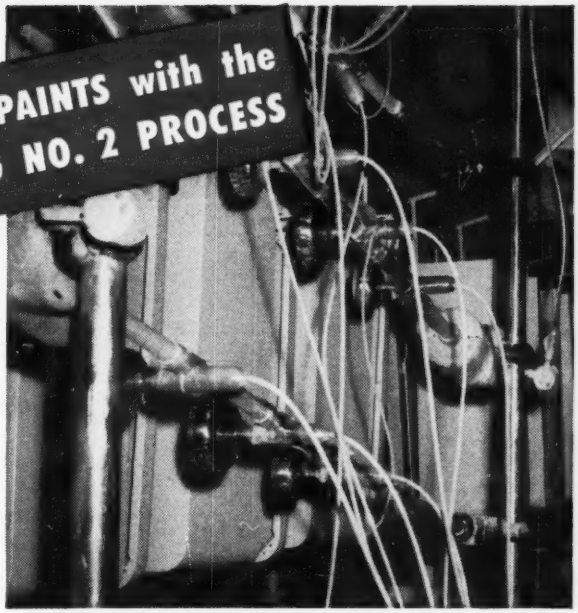


Fig. 7—Indicating thermometer controllers installed in the black oxide finishing line in a Studebaker Corp. plant.
(Photo courtesy Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia 44, Pa., and the Studebaker Corp., South Bend, Ind.)

HOTPOINT PAINTS with the RANSBURG NO. 2 PROCESS



One of two stations applying finish paint with No. 2 electrostatic spray in the new, Chicago plant of Hotpoint Co., Division of General Electric. Ransburg's bunching conveyor, with indexing in between paint stations, is used to properly space cabinets, doors, and inner door liners in the electrostatic coating areas.

● It's significant that the first completely new refrigerator plant in 20 years chooses the modern way—the RANSBURG NO. 2 PROCESS—to meet the exacting, high quality standards demanded in the finishing of HOTPOINT REFRIGERATORS.

Today, both large and small industrial plants all over the nation—and abroad—are relying upon the Ransburg No. 2 Process to provide higher efficiencies . . . increased production . . . uniform high quality painting at a fraction of former finishing costs.

RANSBURG

Want to know more about the unmatched efficiencies of the Ransburg No. 2 Process? Write for our brochure describing the No. 2 Process in detail and showing numerous, on-the-line examples of varied installations in factory finishing departments.

Ransburg **ELECTRO-COATING CORP.**

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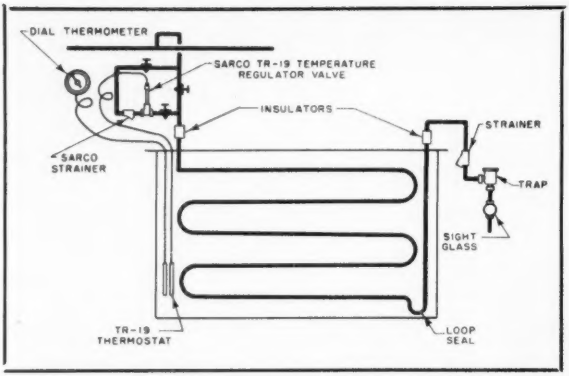


Fig. 8—Self-actuated temperature regulator installation. (Illustration courtesy Sarco Co., Inc., New York 1, N. Y.)

trol instruments (Figs. 6 and 7). For rinse tanks, either self-actuated, or indicating electric contact types are recommended. For heated plating tanks the same types are advisable. Special electrical double contact types are used for heating and cooling control. Solvent degreasing machines should be equipped with vapor line control and a safety valve. Large continuous plating machines might require pneumatic recorder-controllers. The choice of size and type depends on working conditions, and on bath temperature control limits.

Figure 8 illustrates installation of a self actuated temperature regulator for small rinse tanks, plating vats and chemical cleaning tanks. This regulator needs no auxiliary operating medium such as compressed air or electricity. The thermostat bulb is fully immersed in the bath, and connected by a capillary tubing to the temperature regulating valve in a by-pass to the steam supply line. A loop seal in the outlet riser from the steam coil prevents steam locking of the coil. Pipeline strainers protect control valve and steam trap from dirt lodging between seat and disc.

In using temperature control by means of an external heat exchanger and circulation pump, the thermostat bulb is immersed in an enlarged Tee-piece in the circulation return line between pump and heat ex-

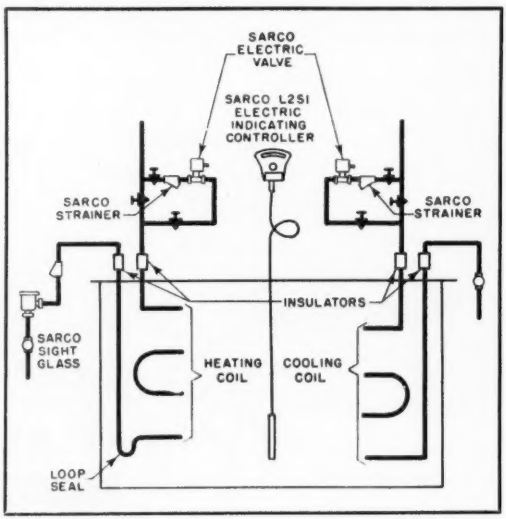


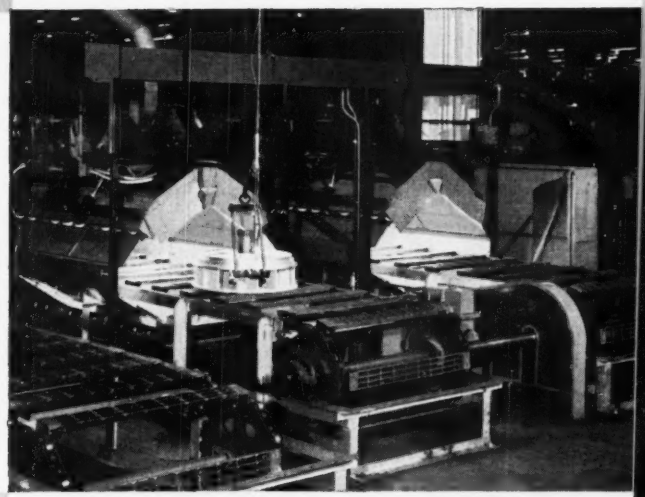
Fig. 9—Electrical contact controller installation to obtain both heating and cooling of a processing solution. (Illustration courtesy Sarco Co., Inc., New York 1, N. Y.)

PUSH-BUTTON HEAT

CONTROLLED AND DIRECTED EXACTLY AS NEEDED FOR FINEST QUALITY BAKING

TYPICAL OF OVER 7,000 INSTALLATIONS

Pictured above is the Fostoria installation at the Studebaker aircraft plant in Chicago. Two 83 ft. ovens bake silicone aluminum paint on jet engine blades in one hour. After baking, a cool down chamber reduces the pieces to room temperature for handling in 30 minutes.



Profit WITH MODERN FOSTORIA OVENS

ALL THESE ADVANTAGES

Faster Cycles
Fastest heat transfer. Greatest output to input. Instant action.

Less Space
Most production for oven size. May be ceiling mounted.

Clean Operation
No by-products of combustion. No condensation.

Uniform Bake
Evenray heat distribution with thorough penetration.

Flexibility
Adaptable to any material, any shape, any color. Infinitely variable heat levels.

Safety Controlled
No warm-up, no shut-off lag. Instant heat control.

Less Maintenance
Lowest source replacement cost. Least efficiency loss.

Highest Efficiency
Less than 2% energy loss. Heats product—not oven walls.

Cuts Costs
Lowest "per piece" production cost. Competitive initial cost.

Reliability
Foremost engineering "know-how" and service.

The miracle of America's industrial progress is based on engineering ingenuity in building and using faster and better production equipment. The equipment of yesterday is obsolete today. New methods, new efficiency are the keys to business growth and profit. This is why plants everywhere are modernizing their baking operations with Fostoria ovens. Now, thoroughly proved in over 7,000 plants, anything that can be baked, can be baked better and more efficiently in the modern Fostoria oven. Here, today, is "push-button" heat, automatically controlled, wide in versatility, low-cost in operation, by far the most efficient of all industrial ovens. For the benefit of your production progress, compare Fostoria advantages with your present baking operation. On any baking problem, request the expert on-the-job assistance available to you by Fostoria field engineers.

THE FOSTORIA PRESSED STEEL CORP., FOSTORIA, O., Dept. P

Send for complete facts

Write for this brochure of technical facts and case histories of many Fostoria oven installations. Tell us your particular problem and we will include data directly applicable to your operation.

INFRA-RED fostoria OVENS

changer. Insulators are recommended between inlet and outlet connection to jacket and piping.

Electrical Indicator-Controllers.

For plating tanks in which close control and temperature indication is required, electrically operated temperature controllers are available, having a temperature indicating scale which can be easily read. The same basic instrument is used for combined heating and cooling plating operations, as shown in installation diagram Fig. 9. These control instruments are used not only for steam heating but also where hot water, gas, fuel oil or electricity is the heating medium. Similarly, control of black oxide finishing is performed where a chemical and water solution is worked at tempera-

Fig. 10—Perhaps this shop needs automatic solution level controls.

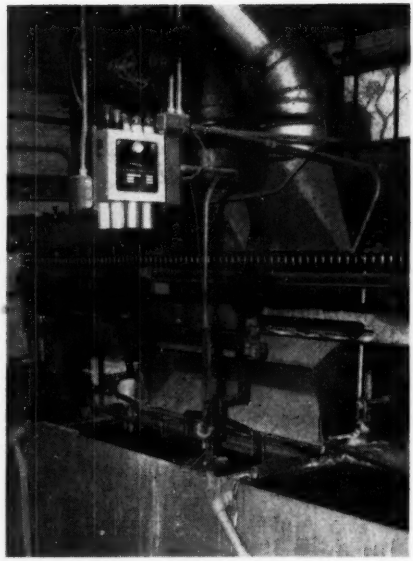


Fig. 11—An electronic solution level control installed on an automatic plating conveyor. (Photo courtesy Plating Process Co., Holyoke, Mass.)

tures between 290 and 350 deg. F. Evaporation of the liquid as well as dry-out by the materials being processed, tend to reduce the percentage of water in relation to the chemical, and when this happens the boiling point of the bath rises. A quick acting controller will add water immediately and in small intermittent quantities so as to interrupt the actual boil as little as possible.

Continuous Plating.

Automatic control of continuous plating plants has to be very quick-acting and reliable. A failure of a thermostat for even a short period of time might spoil a great number of goods. Most of the conveyor type plating machines have, therefore, pneumatic regulator types installed.

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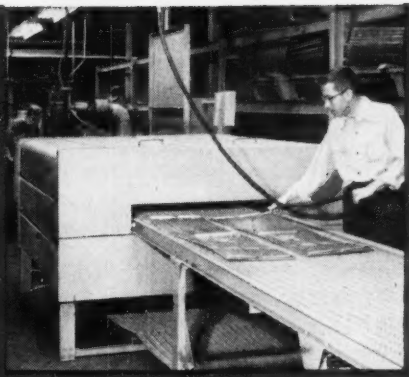

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These means may be comparatively simple in construction,* or may resemble more closely other process control instruments in their design and construction. An automatic level control actuated electrically is illustrated in Fig. 11.

*Paul E. Miller, "How To Maintain Constant Tank Solution Level With Simple Foolproof Fixture," PRODUCTS FINISHING, Vol. 17, No. 12 (September, 1953), pp. 54-58.

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Spotlighting FINISHING Progress

Ultrasonic Cleaning

By Dr. C. Fred Gurnham
Head, Dept. of Chemical Engineering,
Michigan State College

THE field of ultrasonics is a comparative newcomer in the science of physics, and is especially recent when considered on the basis of its technical and engineering applications. Perhaps the first practical application was based on Navy research which started about 1916, in which ultrasonic vibrations were used for underwater object detection. The principal purpose was, of course, the locating of enemy submarines. From that early military application, ultrasonics has spread into several industrial fields, and is currently attracting much attention among finishers because of its use in the cleaning of small metal parts. Many commercial installations for this purpose are in operation at the present time, and a few of these will be described in this article after a brief review of some of the principles of ultrasonics.

Ultrasonics is concerned with a specific type of mechanical energy which is characterized by high frequency vibration. This sonic energy can be transferred through a fluid such as air or water or through a solid material because of the elastic properties of

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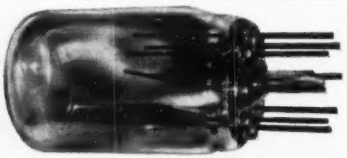
these substances. Ordinary sound or noise is one form of sonic energy, and includes air vibrations with a frequency between 20 and 20,000 cycles per second. Higher frequencies are too shrill to be detected by the human ear, and are included in the field of ultrasonics.

The study of high-frequency vibrations beyond the audible range was formerly called "supersonics," but present custom prefers the word "ultrasonics." The word "supersonic" now refers to a speed greater than that of sound, and we speak, therefore, of supersonic jet planes moving at speeds greater than about 750 miles per hour. "Ultrasonics" refers to sound waves of a frequency beyond the audible range. There is no basic difference between sonic energy and ultrasonic energy except the purely arbitrary distinction of audibility to the human ear.

Sonic Energy Generators

The practical production of sonic energy, at the present time, is based on one of two basic principles: the interruption of a fluid stream, or the pulsation of the fluid by a rapid reciprocating motion, as of a piston. Fluid current interruption devices include whistles and sirens, with the latter the more important because of their greater power capacity. Sirens, however, have been adapted only to gaseous media, and are of little interest in the field of metal cleaning. Ultrasonic whistles have been applied to liquid treatment, although only on an experimental scale to date.

The piston-like reciprocating movement of a solid surface can be



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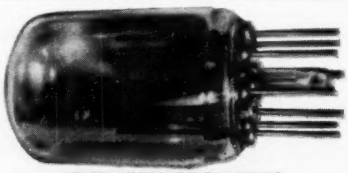

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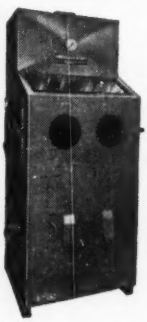

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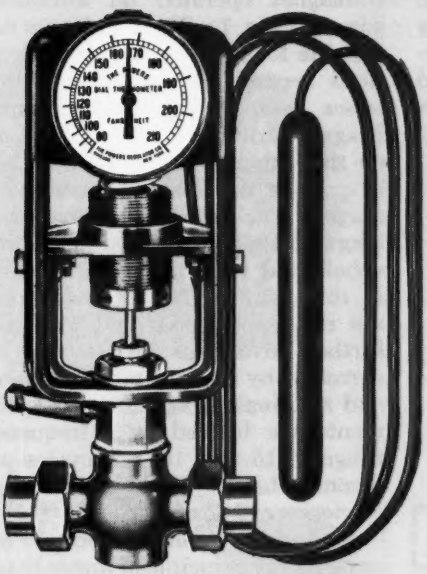

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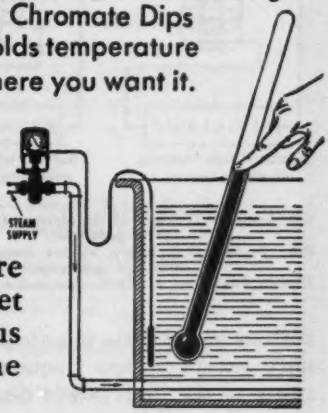

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used to generate sonic or ultrasonic energy, and to transmit this energy through a fluid to a point of application or use. Mechanically operated

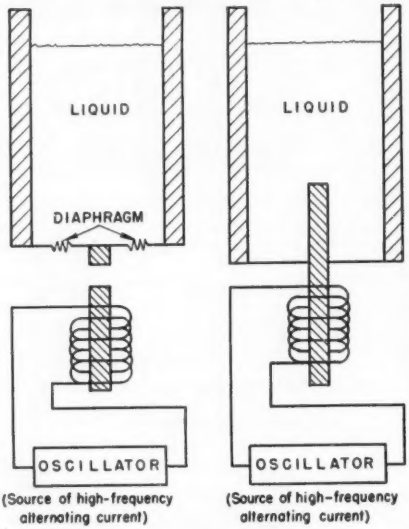

Fig. 1—(Left) Principle of the electromagnetic ultrasonic generator.
Fig. 2—(Right) Principle of the magnetostrictive ultrasonic generator.
(Sketch based on A.I.Ch.E. Symposium, page 12.)

pistons are of little practical importance except at low frequencies, because of the high power required to move the solid mass alternately in opposite directions at high frequency. Electrically driven vibrators are more practical and are utilized exclusively in the commercial applications of ultrasonics in the finishing field. The three principal types of device for converting electrical energy to sonic energy are the electromagnetic, the magnetostrictive, and the piezoelectric.

Electromagnetic ultrasonic generators are based on the alternating attraction and repulsion of an electromagnet operated on alterating current (Fig. 1). These units are not suitable for high frequency applications because of the large energy losses caused by eddy currents. Magnetostrictive devices are based on the dimensional changes caused in certain materials by a varying magnetic field (Fig. 2). The ferromagnetic materials, iron, nickel, and cobalt and their alloys, are usable in this manner. Nickel and Monel are especially good, and have the further advantage of resistance to corrosion by many common solvents and solutions. Magnetostrictive elements are limited to a frequency range of 15 and 100 kilocycles per second when high power and high efficiency are desired.

Piezoelectric sonic generators operate on the principle of dimensional change caused by the application of a high frequency electric voltage, which is usually provided from an electronic oscillator (Fig. 3). These units are well suited to the high frequencies which are required for metal cleaning, although they are limited in their use at low frequencies. Until a few years ago, the possible power input to piezoelectric generators was restricted by the materials available for construction of the transducer, which is the device used to convert electrical energy to sonic energy. The first commercial transducers were single crystals of quartz, or quartz crystals cemented between steel plates; these were naturally limited in size and hence in power throughput. Ceramic materials such as barium titanate, are now available. These can be fabricated by molding, casting, or extrusion into any desired shape, and to

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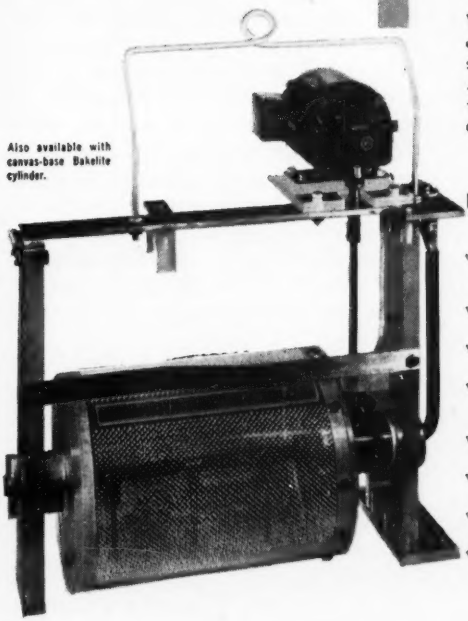

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a much larger size than the quartz elements. By the use of specially shaped transducers, the ultrasonic vibrations can be directed as desired and can be focused or concentrated at specific points or regions in the fluid system. The operating potential for the ceramic transducer is only 120 volts, compared with 1500 volts for the quartz crystals; hence operation in the liquid system is simpler and safer. Quartz, however, is widely used in metal cleaning applications, especially for small parts.

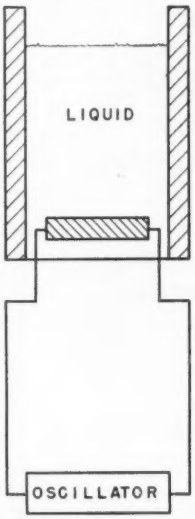

Fig. 3—Principle of the piezoelectric ultrasonic generator. (Sketch based on A.I.Ch.E. Symposium, page 12.)

Sonic Energy Losses

Sonic or ultrasonic energy is easily dissipated or lost, and hence must be generated close to the point of use. During transmission of the energy through the fluid, a portion of the energy is lost by viscous damping, being thereby converted to heat. Some energy is also lost through the container walls, or by absorption at the walls. Another loss of power may occur by cavitation if the pressure variations are excessively great. In cavitation, the liquid is pulled apart for an instant, leaving a hollow bubble which then collapses with considerable power loss. In metal cleaning, this bubble formation and collapse is probably highly beneficial; it is nevertheless a consumer of power. Ultrasonic power is consumed also by the drag action of solid particles suspended in the fluid; this is the desired result in aerosol agglomeration, but in other applications particle drag is an unwanted but unavoidable energy loss. In most cleaning operations, the solvent or solution is continuously filtered or distilled in order to keep the concentration of suspended solid particles to a minimum.

Much of the technical progress which has led to commercial utilization of ultrasonic vibrations has been based on overcoming these energy losses, and on transferring the sonic energy from the generator to the point where it is wanted with a maximum efficiency. Improvements have resulted from placing the transducers directly in the cleaning solution instead of using a separating diaphragm, and from shaping the transducer to focus or concentrate the sonic energy in the desired region.

Uses of Ultrasonic Energy

One of the early applications of ultrasonic energy was in the agglomeration or coagulation of aerosols. An aerosol is a liquid or solid substance dispersed in an extremely fine state in a gas, and includes all types of fumes, smokes, and fogs. In the manufacture of carbon black, much of the product is lost as a smoke, but ultrasonic vibrations can be used to cause coagulation of the fine carbon black particles to a size which is easily removed from the air stream. The same principle has been applied to remove sulfuric acid

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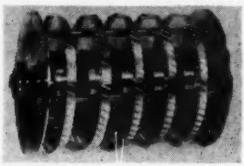

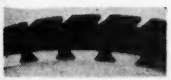

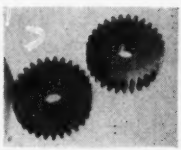

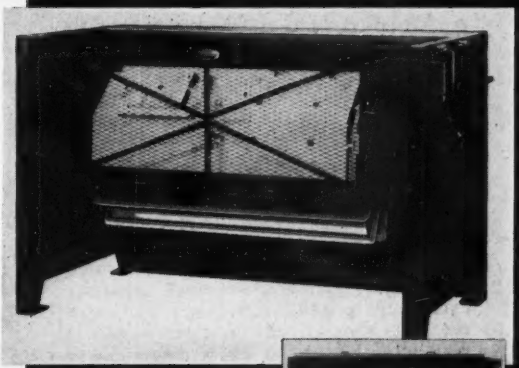

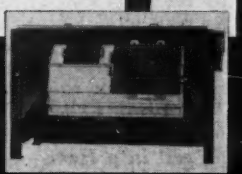

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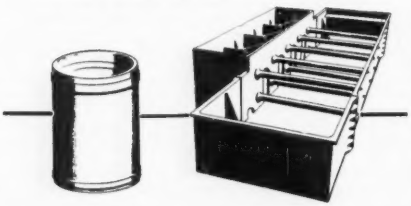

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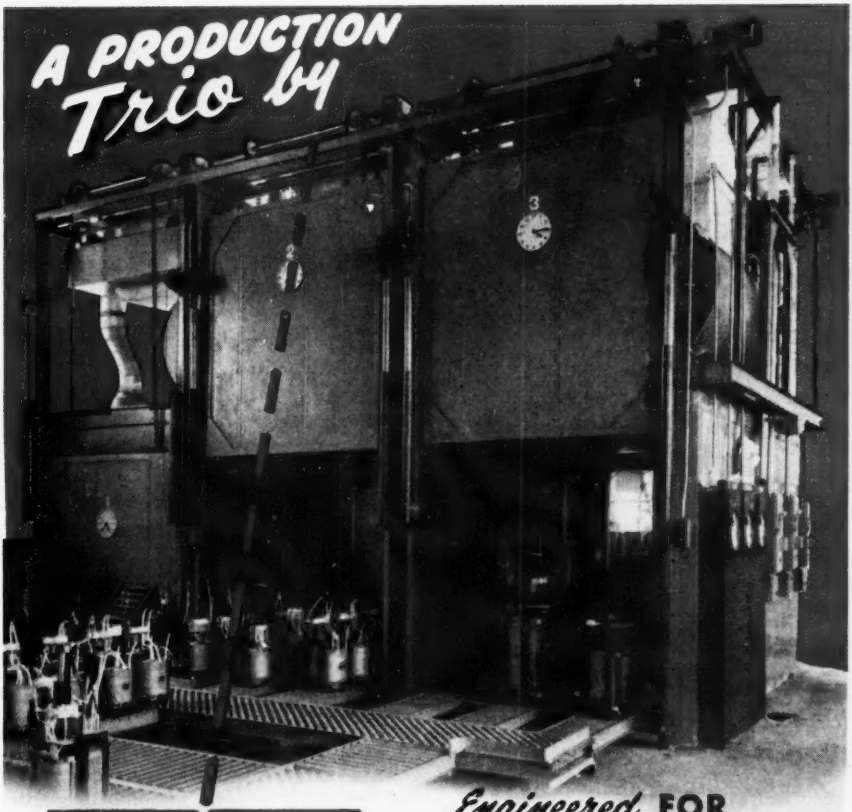
mists from the exhaust stacks of acid manufacturing plants, thereby eliminating a most disagreeable form of air pollution. Dusts from smelters and from chemical operations have also been handled in this manner, and the ultrasonic agglomeration process may soon operate competitively with the electrostatic precipitation process on a large scale.

In the liquid phase, ultrasonic energy has been applied to the processing of milk. The high intensity sound energy causes distintegration of butter fat particles and other agglomerates, and reduces soft-curd milk. Results similar to homogenization are obtained, and the product is reported to be more digestible after the sonic treatment. The disintegration of cellulose by high intensity sound waves has been demonstrated in the laboratory, and a pilot plant for processing wood pulp by this means was reported in the literature. Chemical reactions can sometimes be accelerated or catalyzed to a small degree by high frequency sound waves; among the reactions so reported are the formation of hydrogen peroxide in water containing dissolved oxygen, the generation of nitrous and nitric acids in water containing dissolved air, and the depolymerization or breakdown of high polymers such as polystyrene and nitrocellulose. The application of ultrasonics to metal cleaning is comparatively recent, and it is interesting to note that it was not mentioned in an excellent review of sonic energy applications by Stokes and Vivian in 1951.

Ultrasonic Metal Cleaning

Of particular interest to the finisher is the application of ultrasonic



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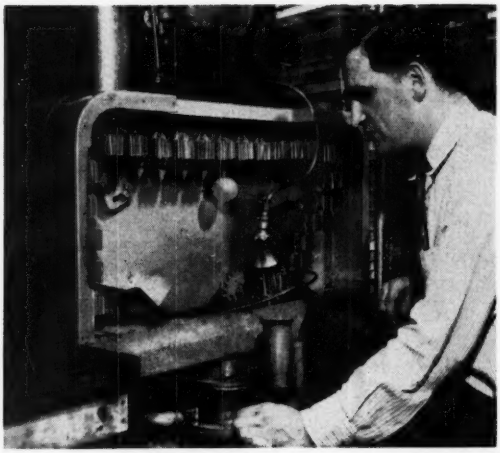

Fig. 4—Cleaning shaver heads (machine front removed). *(Photo courtesy General Electric Co., Schenectady 5, N .Y.)*

vibrations to the cleaning of small metal parts. As usually accomplished, the part to be processed is immersed in a cleaning solution for a brief period, perhaps 30 seconds, during which time the system is subjected to high frequency vibrations, usually in the range from 300,000 to 1,000,000 cycles per second. Either organic solvents or aqueous detergent solutions can be used in the process. This technique has been remarkably successful in removing minute particles of dust or dirt which are not affected by conventional cleaning methods. The action penetrates into deep crevices and serves to remove dirt, oil, grease, chips, lapping and honing compounds, and microscopic particles of soil more thoroughly than any other process, including hand brushing.

The earliest industrial installation of ultrasonic cleaning was at Schick, Inc., of Stamford, Connecticut, where it is used for cleaning the heads of electric shavers. This unit was designed and built by the General Electric Company, and is based on the use of a 75-kilocycles-per-second electronic generator. The shaver heads are mechanically conveyed through a chlorinated hydrocarbon solvent (Fig. 4), passing through the field of intense ultrasonic vibration. This process has eliminated hand brushing, which was formerly the only sure means of cleaning these intricate parts. The degree of cleanliness achieved is markedly better than with the manual operation.

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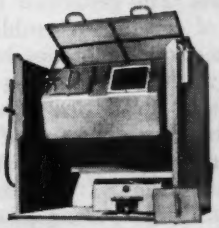

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At the Fairchild Camera and Instrument Corporation, of Jamaica, New York, a similar unit is being used to clean a small precision-wound rotary slidewire potentiometer. Conventional cleaning methods for this device were not satisfactory because the minute particles of dust or dirt left on the wire caused electrical noise in the instrument. Ultrasonic cleaning, using a soap and detergent medium, has been fully satisfactory in this operation.

A multiple-crystal installation is in operation at the Refrigerating Unit Manufacturing Division of the General Electric Company, at Erie, Pennsylvania. This cleaner employs four transducers, each driven by its own high frequency power supply. The vibrators are located 12 inches apart, in the floor of the cleaning tank, and the work passes over them suspended from a conveyor chain. The conveying system is indexed so each piece of work is positioned over the center of each crystal for a maximum portion of the cycle.

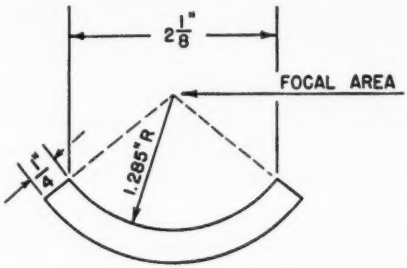

Fig. 6—Cross-section of Detrex Soniclean transducer unit.
(Illustration courtesy Detrex Corp., Detroit 32, Mich.)

In the Soniclean Process, engineered and sold by the Detrex Corporation, Detroit, Michigan (Fig. 5), use is made of the barium titanate ceramic transducer for the conversion of electrical energy to ultrasonic vibrations. The generator is a curved piece of ceramic resembling a split pipe section six inches long (Fig. 6). Only 120 volt power is required for the operation of these transducers, hence they can safely be immersed directly in the cleaner liquid. The ultrasonic frequency generated is 430 kilocycles per second, and the solvent currently used is trichloroethylene, although the process is not limited to these conditions.

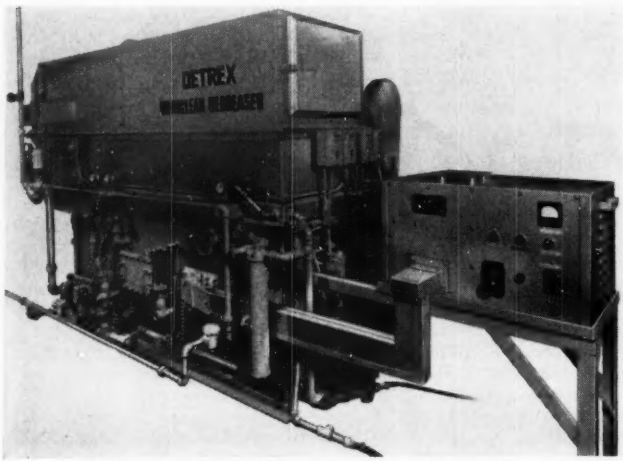

Fig. 5—Overall view of Detrex Corporation Soniclean unit. The equipment shown here is more than 6 feet high and 12 feet long. The high frequency generator is at right.
(Illustration courtesy Detrex Corp., Detroit 32, Mich.)

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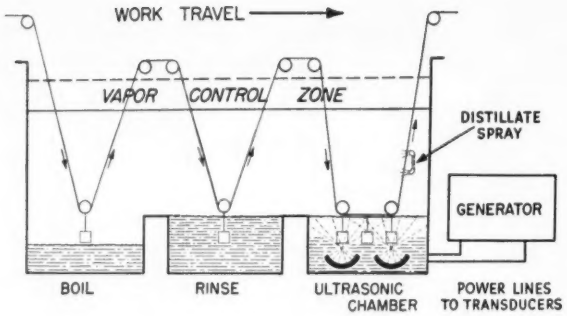

Fig. 7—Sketch showing cutaway view of a typical 3-stage degreaser with an ultrasonic chamber. The solvent vapor precleaning cycle is variable and should follow the preferred degreasing method for the particular work. It may include vapor, immersion, and spray or any combination of these phases. By incorporating the sonics chamber within the degreaser housing, continuous distillation is provided accompanied by constant filtration to remove solids and soil from the sonics bath continually.
(Illustration courtesy Detrex Corp., Detroit 32, Mich.)

Prior to the application of ultrasonic energy, parts are precleaned in the proper cleaning cycle using immersion, spray or any combination thereof prior to entry into the sonics chamber of the degreasing machine. Figure 7 shows how the parts are precleaned and then cleaned with ultrasonic energy all within the same unit. The cleaning action obtained in the ultrasonic degreasing chamber is attributed to an extreme turbulence in this region, which results in a deep and penetrating cleaning action for all types of dirt and soil.

Rapid progress has been made during the past two years in the field of metal parts cleaning with ultrasonic equipment. In addition to the installations described above, other commercial units are now in use for the cleaning of instrument ball bearings, hypodermic needles, sewing machine parts, electrical relays, engine fuel controls, and many other small objects. Very small parts can be cleaned in bulk by placing them in a beaker of cleaner solution, and passing the entire container through the ultrasonic field. Ultrasonic cleaning has not yet been adapted to large parts, and may never be so used because it is an expensive operation. Many firms have, however, found this an economical procedure for the thorough cleaning of small intricate units. The manufacturer of small parts will do well to study present installations and to keep informed on further developments in this highly interesting field.

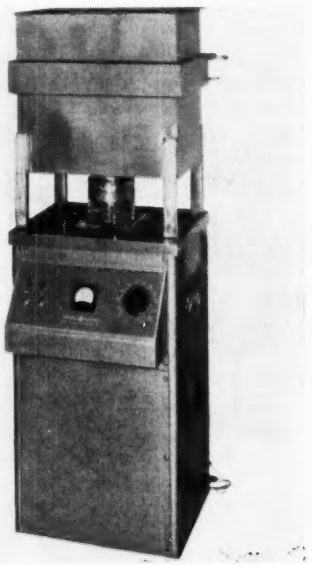

Fig. 8—Ultrasonic degreasing machine mounted on a standard General Electric Ultrasonic Generator. The unit shown is a hand operated machine.
(Photo courtesy G. S. Blakeslee & Co., Chicago 50, Ill.)

Satisfactory Deburring in Noah's Time...

BUT NOT IN 1954!

When you use the right deburring compound in a tumbling setup, you not only cut the *time* required for the removal of burrs by incredible margins . . . but you get far more accurate results, with a tremendous reduction in rejects.

Magnus Deburring Compound virtually eliminates hand labor, yet keeps the metal removal right down to the burrs without affecting the pieces themselves.

Ask us to send complete details on up-to-date deburring with Magnus Deburring Compound.

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New • EQUIPMENT • MATERIALS • PROCESSES

Oil and Water Extractor

An improved oil and water extractor for use on spray painting air lines has been announced by the Binks Manufacturing Co., Chicago 12, Ill. The new AO-120 Extractor effectively traps all oil, water, rust particles and other foreign materials common to compressed air lines. This prevents impurities from reaching the spray guns and eliminates one of the major causes of rejects. It also puts an end to the clogging of air passages in the precision nozzles of spray guns.

The major improvements claimed for Binks' AO-120 Oil and Water Extractor are: more efficient air cleaning; easier operation; and longer life and lower maintenance costs.

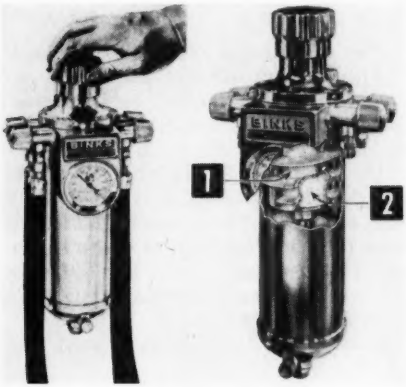
The higher efficiency of Binks AO-120 Extractor is the result of a unique combination of baffling and filtering. When air enters the AO-120 Extractor, it strikes a metal baffle and begins a fast spiral down the tube. As the air rotates, centrifugal force flings out of the air stream heavy particles of moisture, oil, rust and dirt. These drop to the bottom of the extractor for draining.

In addition, the AO-120 also has a new-type, re-usable filter. This not only screens out foreign matter, but also absorbs moisture and fluids. The manufacturer claims that the AO-120 Extractor operates efficiently on lines where the amount of oil and water has been too great for other extractors.

To assure uniform air pressures of the spray guns, this regulator has a fast-acting diaphragm. This diaphragm instantly compensates for pressure

fluctuations caused by operation of spray guns. The valve seat in the regulator is made of polyethylene, which cannot be damaged by oil, water or the usual solvents used with paints.

The combination of long-life features and details of construction contributes to lower maintenance costs. The inexpensive filter can be replaced easily or be washed and reused. An automatic drain eliminates the human element and assures constant trouble-free service.



(Left)—Binks AO-120 Oil and Water Extractor designed to provide better air cleaning and greater operating ease and accuracy. The large knob on top regulates the air pressure. The accurate, legible dial shows operating pressure at a glance. (Right)—(1) Indicates baffle which spirals incoming air down the tube, flinging out impurities by centrifugal force. (2) Is a special "double-action" filter which both screens out foreign matter and absorbs moisture and fluids.

The AO-120 Extractor has 4 outlets —2 for regulated air and 2 connected directly to the air line for blow guns or other air-operated equipment. Each of these 4 outlets is controlled by an easy-to-use air valve knob.

The AO-120 Extractor provides ample air for two heavy-duty guns spraying continuously, and for operating 2 blow guns from the main line pressure outlets.

Bulletin AO-120, describing the AO-120 Extractor is available from Binks Manufacturing Company, 3122 Carroll Ave., Chicago 12, Illinois.

Mixed Bed Water Demineralizer

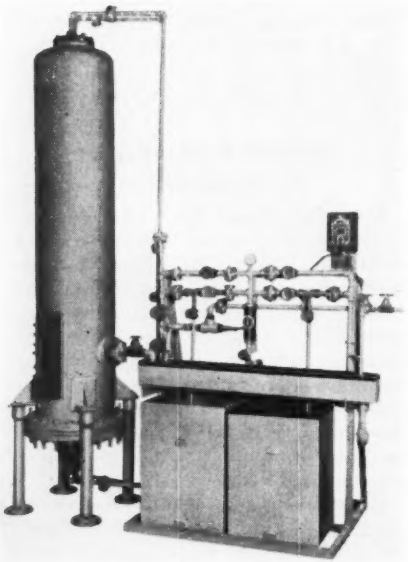
The Barnstead Still & Sterilizer Company, 12 Lanesville Terrace, Forest Hills, Boston 31, Mass., has announced a new line of Mixed Bed Water Demineralizers featuring the latest engineering developments in the ion-exchange process of water purification. Included is an improved system for regeneration of the purifying resins after they have become exhausted. Capacities run from 50 to 2,500 gallons of mineral-free water per hour.

Impurities such as sodium, calcium, potassium, magnesium, iron, copper, chlorides, sulfates, bicarbonates, carbonates, and so on, are eliminated. Even silica, carbon dioxide, and other weak-

ly ionizable impurities are removed. This effective ion removal results in an effluent water of very high electrical resistance.

In operation, raw water enters the top of the column shown in the accompanying illustration, and flows down through a mixture of selected cation and anion resins. In the ion-exchange reaction the particles of cation resin exchange the salt in the water for acids, and the anion particles capture these acids. Thus, water discharged from the bottom of the column is completely demineralized and can be piped directly to storage tanks, or plating and processing tanks, as may be required.

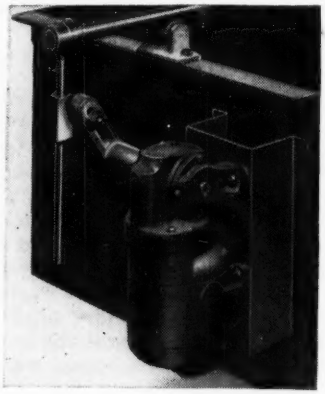
Literature and engineering recommendations will be sent without cost or obligation.



Mixed Bed Water Demineralizer

Cathode Rod Agitator

Important saving in clearance required for mounting is achieved by a new rod agitator announced by Belke Manufacturing Company, 947 N. Cicero Ave., Chicago 51, Ill.



Cathode Rod Agitator

The new unit is vertically mounted. Operation requires but 12 inches beyond the end of the tank—very necessary when tanks are close to wall or close to each other.

The agitator is available in single and double rod types. It is powered by a ¼ h.p. geared head motor drive unit with fully enclosed gears operating in oil. The standard speed is 17 strokes per minute. Stepless stroke adjustment from 3⅛ to 8 inches.

Literature available on request.

Multipoint Recorder-Controller

Fielden Instrument Division, Robertshaw-Fulton Controls Co., 2920 North Fourth Street, Philadelphia, Pa., has

to page 76

BULLETIN DC-100

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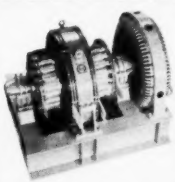
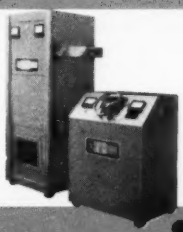
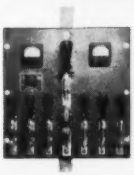

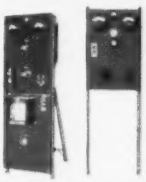

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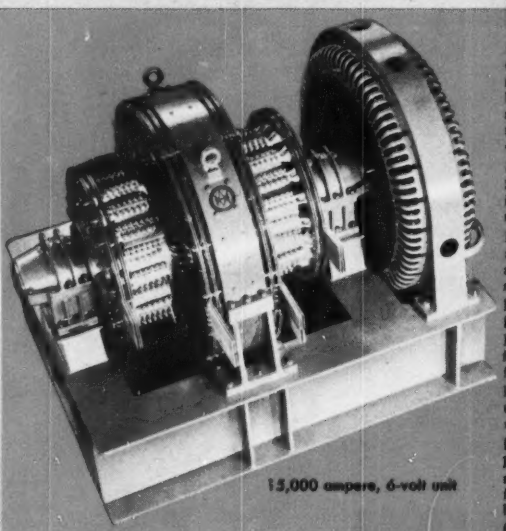
H-VW-M LOW-VOLTAGE DIRECT-CURRENT MOTOR GENERATOR SETS

have *all* these outstanding advantages for the most economical production of current for metal finishing operations—



15,000 ampere, 6-volt unit

BRUSHES

COPPER GRAPHITE CONSTRUCTION—by using only flaked copper particles, ball-mill hammered, all H-VW-M brushes have a special grain structure which presents a minimum of resistance in the direction of useful current flow while offering *four times the resistance* to parasitical circulating currents.

MOLDED-IN SHUNTS

Specially-calibrated cables are molded into permanent and indestructible low-loss electrical contact with the body of the brush.

EQUALOAD SHUNTS—*prevent selective action.* By taking advantage of the thermo-electrical characteristics of a special alloy, closely calibrated H-VW-M Equaload shunts *automatically* regulate current flow, equalize current distribution, prevent brush overloads, cure selective commutation.

BRUSH HOLDERS AND RIGGING

Brush holders of one-piece cast bronze, accurately broached for proper brush fit, are rigidly supported and insulated from the electrical circuit.

Plated-steel torsion springs apply pressure to brushes through bronze fingers and no current can flow through the *springs* or the fingers to destroy their effectiveness.

BRUSH HOLDER SUPPORTS

Brush holders are supported from one end, allowing the maximum degree of accessibility to the commutator surface for cooling and maintenance. Provisions are made for radial brush holder adjustment after years of commutator wear.

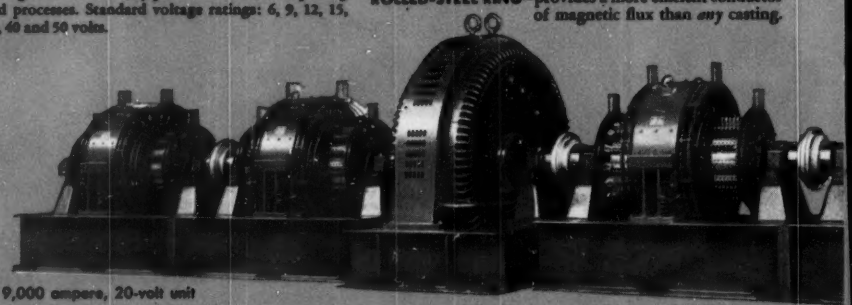
COMMUTATOR RISERS — designed to give fan action, risers provide more than adequate ventilation for commutator and field coils.

ROLLED-STEEL RING SET WITHIN FRAME—provides a firmer base, minimizes vibration by lowering center of gravity of entire generator.

SLEEVE BEARINGS — liberal size, sleeve-type bearings guarantee long, trouble-free life and quiet operation. Split construction used in larger sizes.

ROLLED-STEEL RING—provides a more efficient conductor of magnetic flux than *any* casting.

H-VW-M Motor Generator Sets not only *meet* specifications . . . but continually make *new* standards for voltage regulation, power factor correction, overload capacity, and exceptionally long and efficient life. H-VW-M Generators are built *to prevent selective action* and are *guaranteed* to be correct both mechanically and electrically. These precision-built producers of low-voltage direct current are available in a full range of sizes for every power need in electroplating and allied processes. Standard voltage ratings: 6, 9, 12, 15, 18, 25, 30, 40 and 50 volts.



9,000 ampere, 20-volt unit

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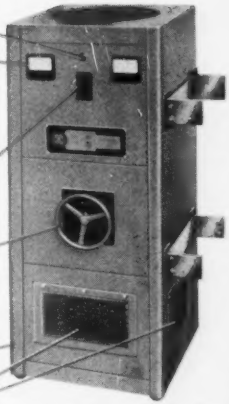
NEW H-VW-M HEAVY-DUTY RECTIFIERS

combine *all* these features most desired for metal finishing operations—

EYE-LEVEL PILOT LIGHT
—quick, positive switch identification.

LARGE, SQUARE-TYPE METERS
—easy to read.



CONVENIENT START-STOP BUTTON
—simplified switching for operating entire unit.

SINGLE-WHEEL TYPE CONTROL
—21 points of fool-proof on-load control, available 10 KW to 20 KW.

AUTOMATIC RESETTING STARTER—DUAL INPUT
—full overload protection *plus* low-voltage release. Dual input: 220/440 v, 3-phase, 60 cycle.

STURDY STEEL CABINET
—with angle-iron frames, grey hammertone finish, may be mounted on rubber shocks (optional).

EASILY-REPLACED DUST-BLOCK AIR FILTERS
—remove all solids and most fumes. Easy to reach from front of cabinet.

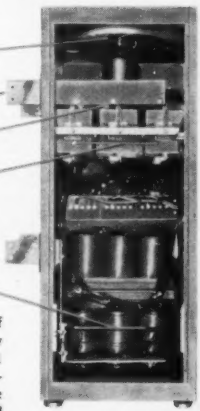
FAN-DRIVEN UPDRAFT
—oversize fan with sealed motor and lubrication constantly cools transformers and stacks.

HEAVY-DUTY TERMINALS
—deliver 6-phase center-tap output with theoretical ripple of *only* 4.2%.

PRECISION-CALIBRATED THERMOSTAT
—positive guard against excessive stack temperature. Instant cut-off.

CUSTOM-BUILT SELENIUM STACKS
—assembled and electrically matched by H-VW-M. Plate areas well above N.E.M.A. specs. Heavy anti-corrosion, anti-fungus coating.

HEAVY-DUTY TRANSFORMERS
—Class B insulation type, rated for continuous operation at temperature rise up to 25° C. over ambient, calculated for convection cooling.



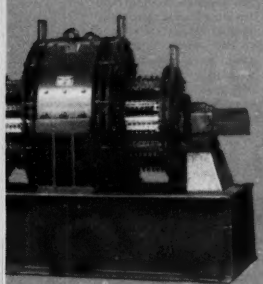
H-VW-M Rectifiers are thoroughly engineered for simple, safe operation to produce the best results. All models have a theoretical ripple of *only* 4.2%, positive assurance of more uniform deposits. Control is extremely simple: one single-wheel control governs 21 points of on-load switching. Oversize transformers offer plenty of reserve capacity. Plate area is increased measurably. With these features—plus the individual features described—this is the most complete, quality line of rectifiers ever designed for metal finishing.

Dual output is available for slight additional cost.

For complete information on H-VW-M Rectifiers ask for Bulletin ER-105.

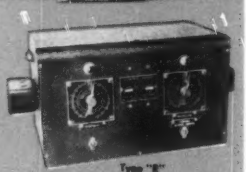
Dual-Output Remote Controlled Unit

For complete information on H-VW-M Generators ask for Bulletin G-102.



H-VW-M's unique combination of: the most modern and complete laboratory for testing and development . . . the ability to provide complete equipment and supplies for every plating and polishing need . . . the complete background of knowledge and experience in every aspect of plating, polishing, cleaning and anodizing.

AND FOR OTHER DC APPLICATIONS...



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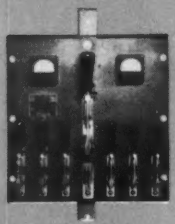
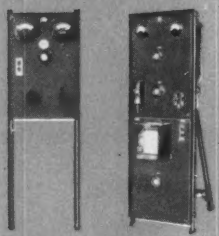




Standard Generator Control Panel

Automatic Anodizing Control Panel

H-VW-M PR CONTROLLERS – for periodic reversal of direct current for the H-VW-M PR and Wes-X Bright Copper Process and similar processes where extremely fine leveling action is important.

Type "R"—for reversing fields of a single generator.

Type "RM"—for reversing fields of 2 or 3 generators simultaneously.

Type "RS"—a sub-controller, same as Type "RM" except no timers.

Type "RL"—for line reversal with rectifiers or single tanks on branch circuits.

Write for complete information.

Type RMH
(special heavy duty Type RM)

H-VW-M TANK RHEOSTATS – furnish desired current density for plating by introducing a definite voltage drop between main lines and tank rods to produce the required voltage between anode and cathode. Asbestos-mounted, all models are equipped with heavy, short-throw Knife Switches with a master switch control on all models to 600 amperes. Designed to eliminate all switch failures from excessive heat. Short circuit switch optional. Standard ampere ratings from 30 to 1000 amperes (larger sizes to 5000 amperes on special order). *Ask for Bulletin TRA-527.*

H-VW-M SPECIAL PANELS—for localized generator control and control for anodizing and similar operations. Standard equipment includes: DC Voltmeter; DC Ammeter with separate shunt; generator field rheostat; exciter field rheostat (or resistor); DPST field switch with discharge resistance (when required); start-stop push-button station for motor starter; motor field resistor and motor field ammeter (on synch. motor-driven sets only). Full line of auxiliary equipment available. *Described in Bulletin G-102.*

Engineered **A COMPLETE LINE OF ELECTROPLATING AND POLISHING PROCESSES, EQUIPMENT & SUPPLIES**

H-VW-M PRODUCTS AND PROCESSES

Abrasives
Acid Pump
Ammeters
Analyses, Solutions
Anodes
Anode Bags
Anode Containers, Ball
Aprons, Platers'
Balancing Tools (Ways)
Balls, Steel Eclipse
Barrels, Burnishing
Barrels, Tumbling
Barrels, Plating
Basket, Scrap Anode
Baskets, Dipping
Brighteners, Addition Agents
Brushes
Buffs
Cathode Rockers
Chemicals, Plating
Chrome Spray Floats
Cleaners
Compositions
Conveyors, Full-Automatic
Conveyors, Semi-Automatic
Cooling Coils
Crocks, Earthenware
Degreasing Solvents
Dryers
Exhaust Fans
Filters
Felt
Fluxes
Generators
Gloves, Platers'
Glue, Belgrade
Heaters
Heating Coils
Hose
Insulating Steam Joints
Klinch Grain Cement & Thinner
Kote-Masq
Kote-Rax, Grade L
Lathes
Lime
Moisture Extractor Equipment
Oxidizing Liquid
Pails, Rubber
Paint, Tygon Plastic
Periodic Reverse Control
Pipe & Fittings, BN
Purification Supplies
Rectifiers
Salt Fog Corrosion Testing Equip.
Sisalin Sections
Bias Sisalweev Sections
Standard Plating Solutions
Tank Rheostats
Tanks
Temperature Controllers
Voltmeters
Wheels
Wrap-Rax Tape
Continuous Strip and Wire Cleaning, Plating and Pickling Lines

H-VW-M

HANSON-VAN WINKLE-MUNNING COMPANY, MATAWAN, N. J.

Manufacturers of a complete line of electroplating and polishing equipment and supplies

PLANTS: MATAWAN, NEW JERSEY • ANDERSON, INDIANA

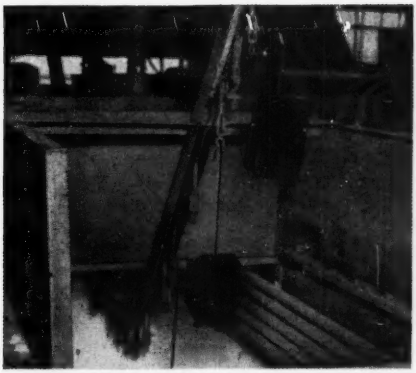
SALES OFFICES: ANDERSON • BALTIMORE • BOSTON • CHICAGO • CLEVELAND DAYTON • DETROIT • GRAND RAPIDS • LOS ANGELES • LOUISVILLE • MATAWAN MILWAUKEE • NEW YORK • PHILADELPHIA • PITTSBURGH • ROCHESTER • SAN FRANCISCO SPRINGFIELD (MASS.) • ST. LOUIS • STRATFORD (CONN.) • UTICA • WALLINGFORD (CONN.)

INDUSTRY'S WORKSHOP FOR THE FINEST IN PLATING AND POLISHING PROCESSES • EQUIPMENT • SUPPLIES

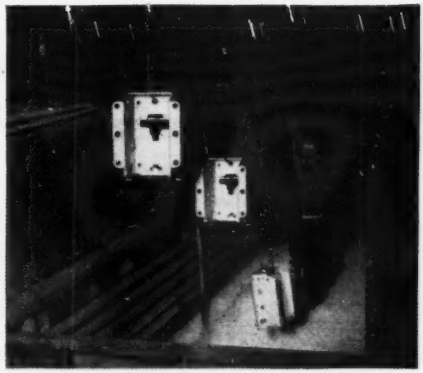
3415

Printed in U.S.A.

THE MODERN SOLVENT THAT FITS EVERY VAPOR DEGREASING NEED



GREASE-COVERED switch gear housings enter vapor degreasing unit by conveyor. A system such as this permits smooth, even flow of housings at high production speed.



CLEAN, WARM AND DRY—the housings emerge from the unit ready for inspection, assembly or further processing—in less than a minute.

DU PONT "TRICLENE" D
(TRICHLOROETHYLENE)

cleans hard-to-reach surfaces in less than a minute

You can clean intricate metal parts easily and thoroughly with "Triclene" D. This rugged solvent goes after the heaviest contaminants . . . routs them from seemingly inaccessible places.

Stable and pure "Triclene" D has been carefully developed over the past twenty years—ever since Du Pont pioneered synthetic solvents for vapor degreasing. It is designed for efficient operation in all types of degreasing equipment . . . removes even the most stubborn of today's buffing and machining compounds. And its narrow boiling range simplifies solvent recovery for economical re-use.

DISTRICT OFFICES: Boston • Charlotte • Chicago • Cincinnati Cleveland • Detroit • El Monte (Calif.) • New York • Philadelphia

Du Pont metal cleaning specialists are experienced in keeping degreasing installations at peak efficiency. They will be glad to assist you in all phases of your metal cleaning program. For this friendly service, simply get in touch with your nearest Du Pont district office.

THIS VALUABLE INFORMATION IS YOURS—FREE

You'll find complete information on the operation and maintenance of vapor degreasing equipment in these booklets. And interesting, up-to-date case histories about degreasing units in operation throughout the metal field are presented in our publication, "MODERN METAL FINISHING." You can receive this wealth of information by checking the appropriate boxes in the coupon below and returning it to us.

E. I. du Pont de Nemours & Co. (Inc.)
Electrochemicals Dept., Wilmington 98, Del.

Please send me more information on vapor degreasing and "Triclene" D. I am interested in receiving the literature checked below. PF-24

☐ Free booklets on vapor degreasing
☐ Free publication "MODERN METAL FINISHING"
(Please add my name to the mailing list)

*Name*_____ *Position*_____
*Firm*_____
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*City*_____ *State*_____

DU PONT
first in solvents for
VAPOR DEGREASING

DU PONT
BETTER THINGS FOR BETTER LIVING
. . . THROUGH CHEMISTRY

NOW fewer finishing rejects

Binks NEW AO-120 Oil and Water Extractor

WORKS WHERE OTHERS FAIL

This new extractor gives you the *clean, dry* air that is imperative for fine finishes by providing more thorough removal of oil, water, dirt and other impurities. Its high air-cleaning efficiency eliminates one of the major causes of imperfect finishes. Thus, when you use the AO-120 Extractor, your rejects go down and your output of perfect finishes goes up.

REPRESENTATIVES IN PRINCIPAL CANADIAN & U. S. CITIES • SEE YOUR CLASSIFIED DIRECTORY

Only the new Binks AO-120 Oil and Water Extractor uses *both* baffling and filtering to clean air used for spray painting. Oil and water, common to most compressed air lines, are stopped dead. No rust or dirt reaches the precision nozzles to cause trouble.

Spiral baffle flings out impurities

When air enters the AO-120 Extractor, it strikes a metal baffle and immediately begins a fast spiral down the tube. As the air rotates, centrifugal force flings heavy particles of moisture, oil, rust and dirt out of the air stream. Impurities so removed drop to the bottom of the extractor for draining.

Unique filter provides DOUBLE action

After leaving the baffles, the air makes a 180° turn and enters the filter. This special absorbent filter not only screens out foreign matter but also absorbs all moisture and fluids. The Binks filter is so effective that the AO-120 Extractor has proved suitable on lines where the amount of oil and water has proved too great for other extractors.

SEND for Bulletin AO-120

This bulletin tells why an extractor is imperative for fine finishes. Also how the AO-120 Extractor simplifies maintenance and saves time. No cost or obligation. Simply mail the coupon TODAY!

Low maintenance thanks to rugged construction, easy-to-clean filter and automatic drain.

For Bulletin AO-120, MAIL COUPON TODAY

Binks Manufacturing Co.
3118-40 Carroll Ave., Chicago 12, Illinois

Gentlemen: Please rush my FREE copy of your Bulletin AO-120 telling how your new extractor cuts finishing rejects, saves time and money in other ways, too. I understand there is no obligation of any kind.

NAME_____

COMPANY_____

ADDRESS_____

CITY_____ ZONE_____ STATE_____

Binks
EVERYTHING FOR SPRAY PAINTING

announced two new models, the Fielden Tekolog, and Null Balance Recorder.

Capable of gathering operating data

Recorder-Controller

from 24 separate sources and logging the collective information on a single circular chart, both the Tektolog and Null Balance Recorder will provide accurate measurement for a vast range of industrial process and laboratory applications. These versatile instruments can be directly coupled to tachometers, resistance thermometers, conductivity cells, strain gauges, carbon dioxide indicators, pH meters, and so on, to produce a permanent record of operating speed, temperatures, pH values. In a number of industrial applications a single Tektolog or Null Balance multipoint recorder will adequately take care of every recording requirement.

Bulletin F-452M available.

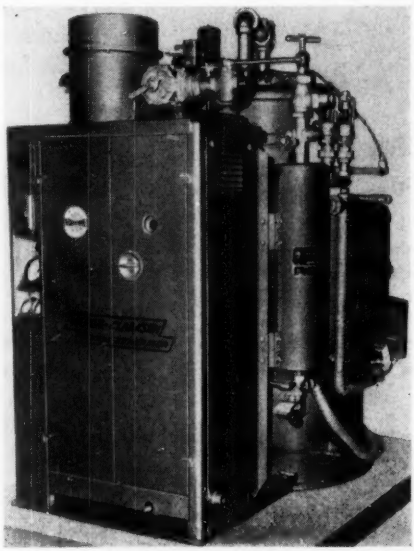
Steam Generator

Manufacturer: Vapor Heating Corp., Dept. PR, 80 E. Jackson St., Chicago 4, Ill.

The Vapor-Clarkson steam generator Model OKJ-4740 is designed for either fuel oil or natural gas as the heat producing medium. The unit can be changed from one fuel to the other by flipping the fuel selector switch.

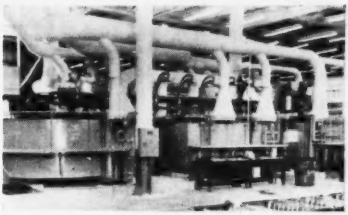
The generator develops controlled steam pressure which may be varied from 10 to 300 pounds pressure, and makes 1500 to 5000 pounds of steam per hour at 80 per cent efficiency. It is fully regulated and controlled by various temperature and pressure protective safety controls designed and installed in accordance with Underwriters specifications.

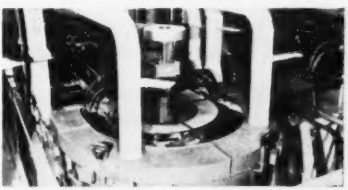
The Vapor-Clarkson generator, complete with 7½ h.p. motor, blower, feed water pump, steam separator, and all the controls, weighs about 6,000 pounds. Over all dimensions of the unit are 50 inches by 80 inches by 73 inches long.



Vapor-Clarkson Steam Generator

AUTOMATIC ANODIZING CHROMATING DULITE PROCESSING . . .





EXCEEDS THE EXACTING REQUIREMENTS OF CANADA'S "ORENDA" JET!

The A. V. Roe Company, Ltd., manufactures the famous ORENDA jet engine for the AVRO CF-100 all-weather fighter. They must meet very exacting metal finish processing requirements.

That's why A. V. Roe selected Frederic B. Stevens of Canada, Ltd., to outfit their Malton, Ontario, Jet Engine Plant with Stevens Automatic Plating and Processing Equipment.

Stevens automatic anodizing, chromating and blackening machines assure metal finish processing that will meet critical specifications while performing as a routine production operation.

If you have a problem involving plating, bright dipping, cleaning and pickling or any other metal finishing process, see your nearest Stevens sales engineer or write direct. FREDERIC B. STEVENS, INC., DETROIT 16, MICHIGAN.

STEVENS

"EVERYTHING FOR METAL FINISHING"

BRANCHES: BUFFALO • CLEVELAND • INDIANAPOLIS • NEW HAVEN • DAYTON
IN CANADA: FREDERIC B. STEVENS OF CANADA, LTD., TORONTO • WINDSOR

Among the many uses of the steam generator are those of providing steam to heat cleaning, electroplating, phosphatizing, or other solutions, and providing steam for atomizing paint.

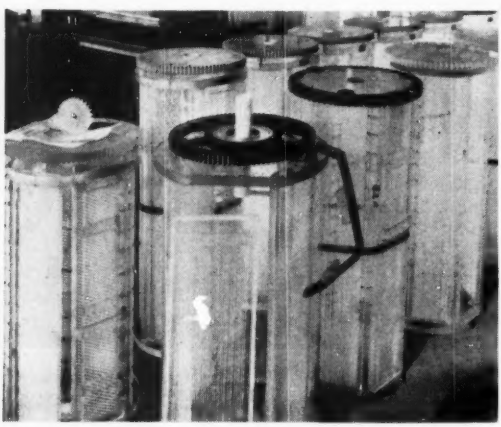
Plating Barrel Cylinders

A complete line of replacement plating cylinders of "H-T Sincolite" to fit all makes of barrel superstructures, old and new, is being offered by The Singleton Company, 5317 St. Clair Avenue, Cleveland, Ohio, according to Albert Singleton, president.

"H-T Sincolite," (H-T Lucite and Plexiglas), was introduced by Singleton 6 years ago, and has since proved itself in hundreds of plating applications. It is resistant to acids and alkalies, non-deteriorating and non-contaminating, transparent, lightweight, rugged, and lasts indefinitely.

Singleton "H-T Sincolite" Plating Cylinders are said to be engineered to fit perfectly in all the standard makes of plating barrel superstructure. They consists of two heads, six heavy rails and five panels—incorporating the exclusive heavy-ribbed, Singleton fusion-welded construction throughout (tensile strength of 10,000 p.s.i.). With no dangerous stresses from heating and bending, they hold their shape permanently without distortion in temperatures up to 200 deg. F. The unique Singleton perforation pattern provides 17 per cent more holes per square inch in panels for better, faster plating, yet it is structurally stronger. Included are necessary installation accessories.

Bulletin RC-101 is available on request.



Singleton "H-T Sincolite" Plating Barrel Cylinders

Rust Proofing Process

After several years of use in commercial production and comparative tests by ordnance and private laboratories, Rust-Proofing and Metal Finishing Corporation, 75 Commercial Ave., Cambridge, Massachusetts, has announced a chemical treatment for iron and steel articles. Products treated by this process are reported to withstand standard salt spray tests from 12 to 24 times as many hours as those treated by other methods.

Called "Endurion," the new immersion treatment for rust proofing was developed in the research laboratory of Rust-Proofing and Metal Finishing Corporation. It can now be applied in integral colors ranging from gray and black through blue, green and olive drab.

The Endurion treatment's major contributions toward another advance in the war against rust and corrosion are:

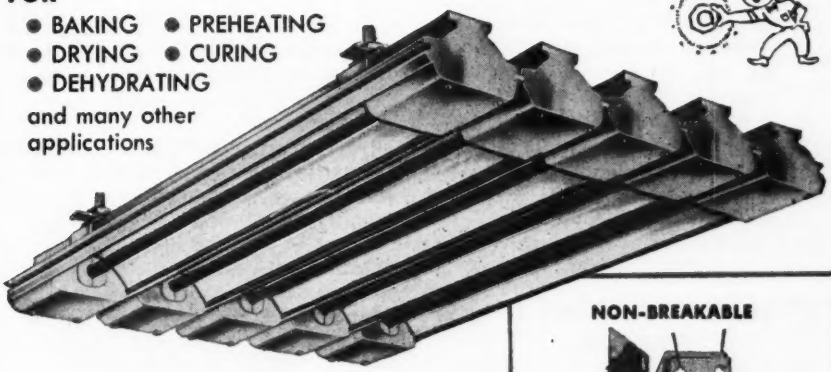
NOW DIAL INFRARED HEAT WITH CHROMALOX

Electric Radiant Heaters

FOR

- BAKING
- PREHEATING
- DRYING
- CURING
- DEHYDRATING

and many other applications



CHROMALOX Electric Radiant Heaters are a new and proved solution to process heat problems. They give you all of these production advantages:

1. **Infrared radiation in longer wave lengths which are absorbed with almost equal speed by all colors and surfaces.**
2. **Uniform blanket of heat without hot spots.**
3. **Infinitely variable heat, adjustable to the work from zero to 100% range, provided by dial controls.**
4. **Quick, low cost oven construction by interlocking units into desired assemblies.**

In addition—all-metal Chromalox Radiant Heaters are unbreakable and immune to shock, vibration, steam and splashed liquids; safe with volatiles.

Why not check this new production line tool? See how it can fit into your finishing operations.

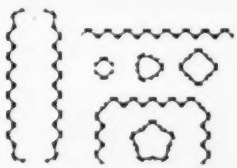
Send for complete Application File

You'll get details on many jobs Chromalox Radiant Heaters are doing in industrial plants; and you'll likely find application ideas which can point the way to added savings and increased production.

NON-BREAKABLE

There's nothing to break—nothing to shatter and contaminate work in process when Chromalox Radiant Heaters are on the job.

VERSATILE APPLICATION



Cross-section views of a few of the many oven designs possible with Chromalox Radiant Heaters.

IC-53

Chromalox electric heat for modern industry

EDWIN L. WIEGAND CO., 7552 Thomas Boulevard, Pittsburgh 8, Pa.

1. A substantial and significant increase in rust proofing durability on both oiled and un-oiled surfaces.
2. Uniform protection on every surface the chemical treatment fluid can reach, thus providing a degree of protection at all points.
3. Greater protection without "building up" for threaded parts and close fitted assemblies.
4. A superior base for bonding paint.
5. A range of color finishes integral with the metal for articles too complicated to paint — or for identification purposes.

Chips for Precision Barrel Finishing

The Chicago Wheel & Manufacturing Company has announced the marketing of a new precision barrel finishing chip, called Novaculite. Among the advantages of Novaculite, according to the manufacturer, are that chips of this material have unusually long life, will reach hard-to-get-at indentations without wedging or clogging holes. It is also stated that Novaculite chips produce an unusually fine finish to close tolerances, with uniform radii on all edges of the work.

The manufacturer states that Novaculite chips have a unique conchoidal shape, irregularly formed with sharp edges and elongated points. This means that a larger size chip can get at hard-to-reach cavities, doing the work of small chips without the danger of clogging.

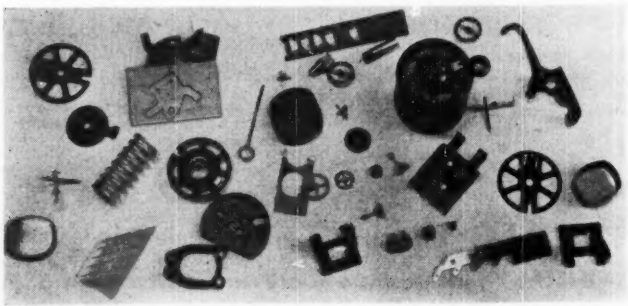
In precision barrel finishing Novaculite chips are said to produce a mild honing abrasive action for a smooth even finish without dents, burrs, or damage to stamped or cast parts. They offer particular advantages for finishing parts to be used in electronic assemblies or parts that would subsequently be used for plating.

Samples of Novaculite chips may be obtained from Chicago Wheel and Manufacturing Company, 1101 W. Monroe Street, Chicago 7, Illinois.

Speedylectric Hydrosteam-Jet Cleaner

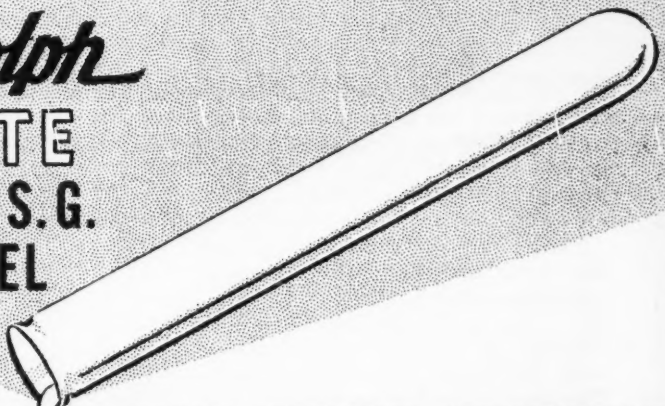
Announced by Livingstone Engineering Company, 100 Grove St., Worcester 5, Mass., the Speedylectric Hydrosteam-Jet Cleaner is available in both stationary and portable models. The source of steam is the Speedylectric Steam Generator.

According to the manufacturer, the built-in Sellers Hydraulic unit provides a solid jet of superheated water and detergent. propelled under extremely high discharge pressure and tempera-



Parts finished with Novaculite, a barrel tumbling abrasive. Notice intricate design, deep holes and delicate construction.

Randolph WHITE BAKING S.G. ENAMEL



FOR VARIOUS SPECIALTY APPLICATIONS IN INDUSTRY . . .

- REFRIGERATORS
- WASHING MACHINES
- KITCHEN CABINETS
- HOUSEHOLD EQUIPMENT
- VENETIAN BLINDS
- AIRCRAFT

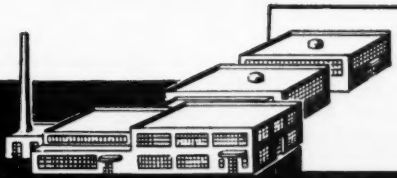
Out of Randolph's extensive experience and continuous research has come this remarkable finish exactly suitable for a wide variety of products. For equipment as different as Venetian blinds and airplanes, this enamel provides a surface coating with unexcelled qualities—

Faultless uniformity
Tough durability
Staunch protection
Striking eye appeal

Highly essential, too — outstanding Randolph service makes deliveries to you promptly for normal or rush-order production.

Let us show you what this enamel can do for your product.

Write us today!



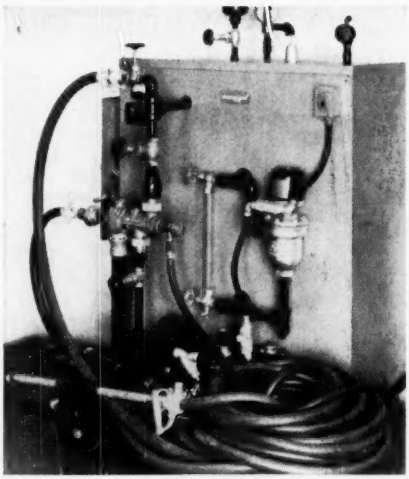
RANDOLPH
PRODUCTS COMPANY
CARLSTADT, NEW JERSEY

DOPES · LACQUERS · ENAMELS · THINNERS

ture. Cannon-like force, manually controlled, removes grease deposits and soil encrustations. It reportedly reaches inaccessible machinery parts, eliminating down-time and wasted man hours.

For delicate parts of machines, motors and equipment that must be protected from water and excess moisture, the Speedylectric Hydrosteam-Jet Cleaner provides pin point cleaning under fingertip control of the operator. The steam lance can also be effectively used for applying concentrated, undiluted solvents, detergents or stripping agents, where such chemical aids are needed to soften and loosen accumulations or coatings.

The Speedylectric Hydrosteam-Jet Cleaner is available for operation on 220, 440 or 550 volt, 3 phase or 2 phase, 60 or 25 cycle power supply.



Speedylectric Hydrosteam-Jet Cleaner

Distributors in Principal Cities

FILTER

*Reg. App. for

50-1500 GAL/HR

ANY ELECTROPLATING SOLUTION

NO PITTING NO ROUGH DEPOSITS

Model LSIN-10 Cap. 100 gal/hr

• Filters all solutions from pH 0 to pH 14. • No loss of precious solutions. • Filter Assemblies—H.T.Lucite, SS 316, Rubber-Lined, Haveg or Sethrin*. • Filter Tubes—Cotton, Dynel, Porous Stone, or Porous Carbon. • Pumps—SS 316, Hastelloy, Plastic; Centrifugal or Self Priming.

Sethco MFG. CO.

70-72 Willoughby St., Brooklyn 1, N. Y.

High-Speed Paint Stripper

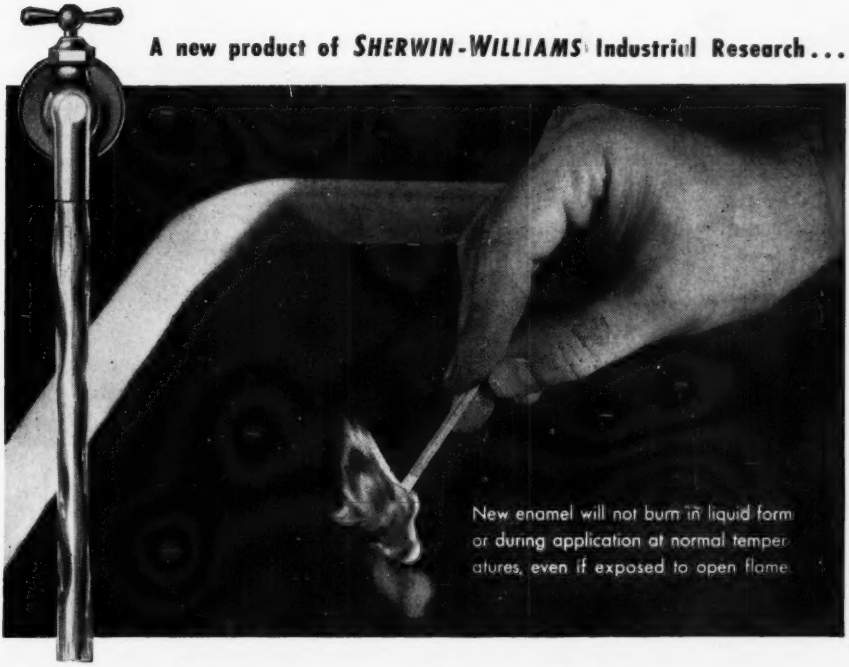
Northwest Chemical Company, 9310 Roselawn, Detroit 4, Michigan, has announced the development of Liquid Stripper No. 6, a completely new approach to the problem of chemical stripping of paint and other organic finishes from steel, magnesium, and zinc castings.

Stated to be the closest approach yet perfected to a "universal" paint stripper, Liquid Stripper No. 6 has proved its ability to completely remove organic finishes rapidly, in one run-through, without harm to the metal surface.

Liquid Stripper No. 6 is safe; it involves no fire hazard, no odor, no fumes, and is non-toxic. It has been thoroughly tested in actual production.

Liquid Stripper No. 6 converts the paint film into a soluble form—easily rinsed off—and contains no chemicals

A new product of *SHERWIN-WILLIAMS* Industrial Research . . .



New, WATER-reducible enamel
cuts fire hazards . . . retains top film properties

- **REDUCES FIRE HAZARDS during application and storage**
- **ELIMINATES EXPENSE for reducers . . . requires only water**
- **REDUCES PAINTING FUMES and ODOR**
- **PROVIDES CONVENTIONAL FILM PROPERTIES**

One of industry's biggest problems—the fire hazards present during application of conventional finishing materials—now can be reduced or eliminated.

Sherwin-Williams Water-Reducible Enamel—a product of extensive research and experience in industrial emulsions—utilizes only *water* as a reducing agent. It will not burn, in liquid form, at normal room temperatures, nor during spray or dip application, even if exposed to open flame. It produces a very hard gloss finish with properties equal or superior to conventional organic solvent enamels. Cured film is not water soluble.

Water-Reducible Enamel is available in black for finish of machine or metal parts of all types—can also be supplied in colors. Contact your Sherwin-Williams Industrial Representative for details, or write The Sherwin-Williams Co., General Industrial Division, Cleveland 1, Ohio.

SHERWIN-WILLIAMS

INDUSTRIAL FINISHES

which cannot be run through sewers.

The company offers to process sample parts to be stripped to prove the effectiveness of the new product.

High Temperature Vaneaxial Blower

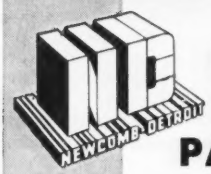
Developed by the Hartzell Propeller Fan Company, Piqua, Ohio, the High Temperature Vaneaxial Blower, a modification of the standard Hartzell Belt-Drive Vaneaxial Blower, is designed to move air at temperatures up to 350 deg. F., or air containing acids, alkalies or fine abrasive dust without fear of premature failure of belts and bearings.

High Temperature Vaneaxial Blower

The high temperature blower is available in the same range of sizes, 12 inches to 54 inches, and air deliveries are the same as for standard Hartzell models. The addition of a special dummy section containing the guide vanes

NEWCOMB-DETROIT

PIONEERS IN ENGINEERING, MANUFACTURE AND INSTALLATION OF



INDUSTRIAL OVENS
SPRAY BOOTHS
PARTS WASHERS
DUST COLLECTORS
AIR SYSTEMS

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DETROIT DIVISION—GRAND RAPIDS DIVISION—
NEWCOMB INDUSTRIES LTD., WINDSOR DIVISION

You're ahead 3 WAYS with KEM LUSTRAL® ENAMEL

Simplify the job . . . do away with need for many special enamels . . . get the benefit of volume production of highest industrial quality materials! If you use enamels for any purpose, or any product—wood or metal—KEM LUSTRAL's multi-usefulness may show a way to important savings.

Get the facts about this top-quality, versatile industrial enamel. It's one of a complete line of Sherwin-Williams product finishes especially developed to meet production-line requirements. Check the classified telephone directory for location of nearest Sherwin-Williams Branch—ask for brochure KL-511. Or write The Sherwin-Williams Co., General Industrial Division, Cleveland 1, O.

Services of trained industrial finish specialists available in your area through nearest Branch

makes possible the location of the drive on the negative pressure side of the blower. Clean air from outside the duct is drawn in through the belt tube and over the bearings.

According to the manufacturer, the complete removal of vulnerable parts from contact with destructive elements in the airstream insures long life and trouble-free operation under adverse conditions.

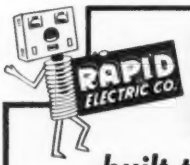
Multiple Purpose Barrel Finishing Compound

A new multiple purpose barrel finishing compound said to produce brighter finishes in less time on a wide range of metals has been introduced by Minnesota Mining and Manufacturing Co., 900 Fauquier St., St. Paul 6, Minn.

Called "Honite" brand Multi-Burnish compound, it can be used for burnishing operations where three or four conventional compounds were previously required. In addition, it can be used with all types of barrel finishing media.

During the first part of the operating cycle, the new compound acts as an effective cleaner and permits rapid deburring. It then develops progressively richer suds which act both as a lubricant and as an effective suspending agent, resulting in high luster and brilliant color to the work pieces.

Among the advantages of Multi-Burnish compound are: it can be used with almost any metal and is especially recommended for use with zinc, alu-



SELENIUM RECTIFIERS

. . . built to your Specifications

INDUSTRIAL AND LABORATORY USE

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- PERIODIC REVERSERS
- CONTROLS

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2877 MIDDLETOWN ROAD, N. Y. 61, N. Y.

FUNCTIONAL FINISHES!!

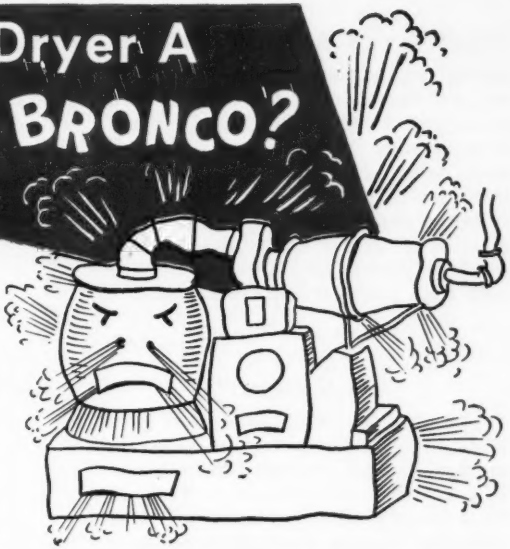
If you require your coatings to accomplish some specific task — something beyond mere ornamental appearance or average longevity —

Try Us!

We make ACRYLIC, ALKYD, CELLULOSIC and VINYLOID coatings for a very wide range of specialized industrial applications.

The Varnish Products Co.
5204 Harvard Avenue
Cleveland, Ohio

Is Your Dryer A BUCKING BRONCO?



In order for a centrifugal dryer to stay put it should be heavy. That's why the modern Nobles Dryer is about twice the weight of most dryers. Extra weight is one of the reasons for its stability, its freedom from vibration, its smooth operation, and long trouble-free life.

It's all new in design and principle. A powerful suction fan *draws* the air completely through this modern Nobles Dryer and exhausts it at the bottom! Electric or steam heaters are mounted in the cover of this machine of advanced design for a saving of space and elimination of heat loss.

Air moving equipment isn't an extra. The powerful suction fan is an integral design feature of each machine. A brake pedal extending around the entire work area controls an internal, expanding hydraulic brake for quick, smooth stops.

Why not take the first step now toward modern quick drying and lowest costs?

NOBLES ENGINEERING & MANUFACTURING CO.

441 EAST SEVENTH STREET — ST. PAUL 6, MINNESOTA

Write Today for the FREE NOBLES DRYER BROCHURE

minum, magnesium, bronze, and mild and stainless steel; it can be used with all types of barrel finishing medium such as steel balls, natural stones, or aluminum oxide barrel finishing chips; it will not break down and lose its lubricating qualities even over prolonged runs; it is completely soluble, making for free rinsing and producing parts with high luster and clean surfaces.

Polishers

The Stamford Works, London, England, has introduced to the American market, through Newage International, Inc., 235 East 42nd St., New York, N. Y., a line of polishers. Stamford Works' products, during their fifty years of service, have gained an excellent worldwide reputation.

The machines are of extra sturdy, solid construction. The motors were designed for the machines. They are provided with extra large shafts to carry all kinds of loads, yet offer smooth, vibrationless operation under any conditions. Combined with the heavy shafts are heavy duty bearings which permit these polishers to be used where a four-bearing machine would normally be regarded as essential.

Stamford Polishing Stand

Particular attention has been given to work space. There is adequate room for 2 operators working simultaneously even though they are handling work awkward in size and shape.

DANIELS
#4 OLS
in unloading position
PLATE SMALL PARTS
with the DANIELS OLS
For plating die castings, stampings, screw machine parts, castings or any small parts in bulk, this Daniels OLS Oblique Plating Barrel is unsurpassed.
Write for complete details today
DANIELS PLATING BARREL & SUPPLY CO.
Electroplating and Polishing Equipment and Supplies
129 Oliver Street, Newark 5, N. J. • Tel. MArket 3-7450

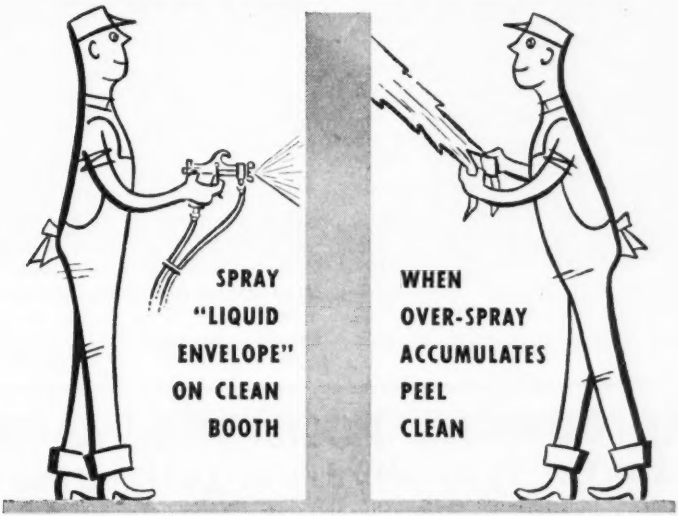
Paint Stripper

Harstan Chemical Corporation, 1247 38th St., Brooklyn 18, N. Y., has announced the development of a paint stripper. The stripper, No. 467, is especially designed to remove both baked and air dried enamels and lacquers.

easy way to keep booths clean

"LIQUID ENVELOPE"

STRIPPABLE PROTECTIVE PLASTIC FILM



That's all there is to the simple, labor-saving, inexpensive "Liquid Envelope" way to keep booths firesafe, better illuminated, better ventilated. Costs far less than the outmoded hand-scraping or grease-papering methods. ***New Users:*** Order a 5 gallon Test-Sample at the drum-lot price. Hundreds of steady users found out that way. Why not you?

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Sprayway Co., Los Angeles, Calif.
Supplee-Biddle-Steltz Co., Philadelphia, Pa.
(Industrial Division)
Tanner and Co., Indianapolis, Ind.
Tri-State Spray Equipment & Compressor Co.,
Omaha, Neb.; Rock Island, Ill.
In Europe:
Jenson & Nicholson, Ltd., London, Eng.

It readily removes epons, baked enamels, wrinkles, vinyls, and some zinc chromate primers. No. 467 is non-corrosive and safe for use on all metals. It is non-flammable and is used at room temperature.

Harstan No. 467 acts by destroying the adhesion between the base metal or wood and the organic finish, wrinkling away the paint in large pieces.

In operation a water seal is poured over the stripper to prevent evaporation. Depending on the specific gravity of the paint, the pieces of it either float directly under the water seal or fall to the bottom of the tank. In either case they do not interfere with the action of the stripper and when large quantities accumulate they can easily be removed.

No after treatment is required after stripping other than rinsing in water or solvent to wash away loosely clinging paint.

Literature furnished on request.

Spray Room Exhaust Fan

The M & E Manufacturing Company, 2531 Winthrop Avenue, Indianapolis 5, Indiana, has announced an improved wall or window mounted sheet metal exhaust unit. The unit is designed for installation in areas where it is necessary to exhaust fumes.

The sheet metal window mounted unit is installed in an existing window or concrete block wall. The motor is accessible for inspection and maintenance from inside the room by a convenient access door. The motor is protected from the weather by a protective sheet

MULTI-PURPOSE POLISHING MACHINE

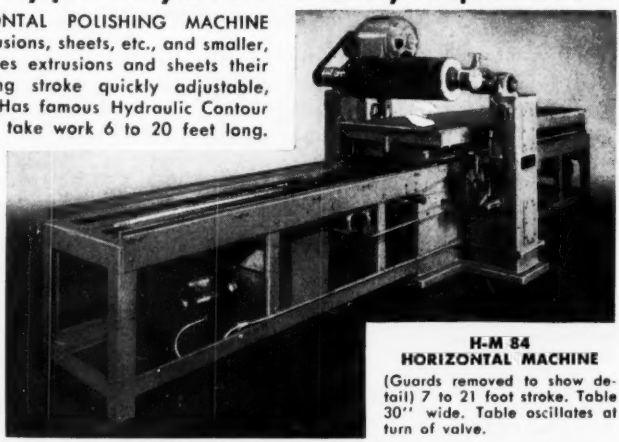
Horizontal Type—Hydraulically Operated

The CENTRAL HORIZONTAL POLISHING MACHINE handles long lengths, extrusions, sheets, etc., and smaller, odd-shaped pieces. Polishes extrusions and sheets their ENTIRE LENGTH. Polishing stroke quickly adjustable, 2 inches to full capacity. Has famous Hydraulic Contour Device. Standard sizes to take work 6 to 20 feet long.

- Polishes extrusions and sheets complete, end to end.
- Simple operation. Women run them.
- Adjustable stroke 2" to full capacity.

Machines, 7 to 21 foot stroke.

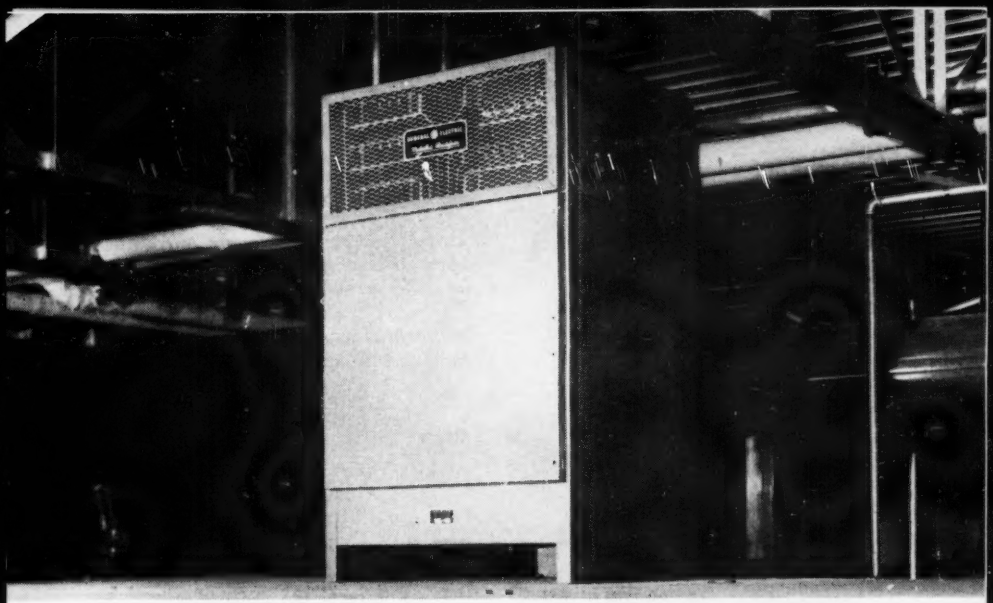
FULL INFORMATION ON REQUEST.



H-M 84 HORIZONTAL MACHINE
(Guards removed to show detail) 7 to 21 foot stroke. Table 30" wide. Table oscillates at turn of valve.

CENTRAL MACHINE WORKS

72 COMMERCIAL ST. • WORCESTER, MASS.



THIS G-E PLATING RECTIFIER IS MOUNTED ON A BALCONY NEAR THE ROOF

WHEREVER YOU INSTALL THEM . . .

G-E Plating Power Supplies Save You Money

With General Electric Plating Power Supplies you save on installation, operating, and maintenance costs. Automatic regulation assures uniform quality work and fewer rejects.

SAVINGS—Installation costs are lower because G-E plating rectifiers don't need special foundations—can even be mounted on balconies as shown above.

Operating costs are lower because rectifier stacks are operated at their most efficient ratings. Saturable reactor control of d-c output minimizes power costs.

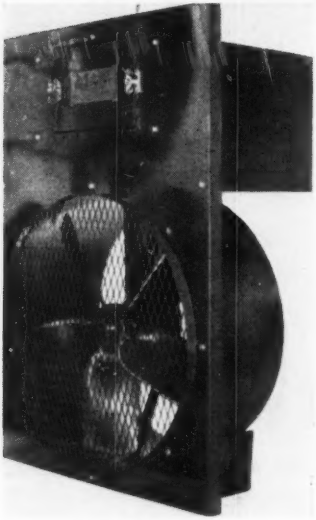
Only maintenance required is occasional lubrication of the cooling fan, the one moving part. Long life for the equipment is assured by the exceptionally high quality of the G-E rectifiers used.

AUTOMATIC REGULATION can be purchased now or added to manually controlled units at any time in the future. It assures uniform quality work by maintaining constant voltage or current within ±2% over most of its rated range regardless of tank load or variations in voltages.

FURTHER INFORMATION on G.E.'s complete line of plating power supplies is available from any authorized G-E plating agent, or by writing *Section 464-14J, General Electric, Schenectady 5, N. Y.*

You can put your confidence in—

GENERAL ELECTRIC



Spray Room Exhaust Fan

metal cover on the exterior of the building. Incorporating the window mount unit with a heavy duty belt driven M & E exhaust fan assures the user of meeting the standards of Fire Insurance Underwriters for hazardous locations.

Descriptive literature is available.

Neoprene Gloves

To provide maximum effectiveness in non-slip gripping action, the Surety Rubber Company of Carrollton, Ohio, has developed a new Griptite finish for use on its non-allergic Neoprene type industrial gloves.

By combining the features of the Griptite finish and the all-Neoprene glove, the Surety Rubber Company is able to produce a permanent rough-finished glove that can be used safely in handling the most delicate materials because of the absence of abrasive particles in the construction.

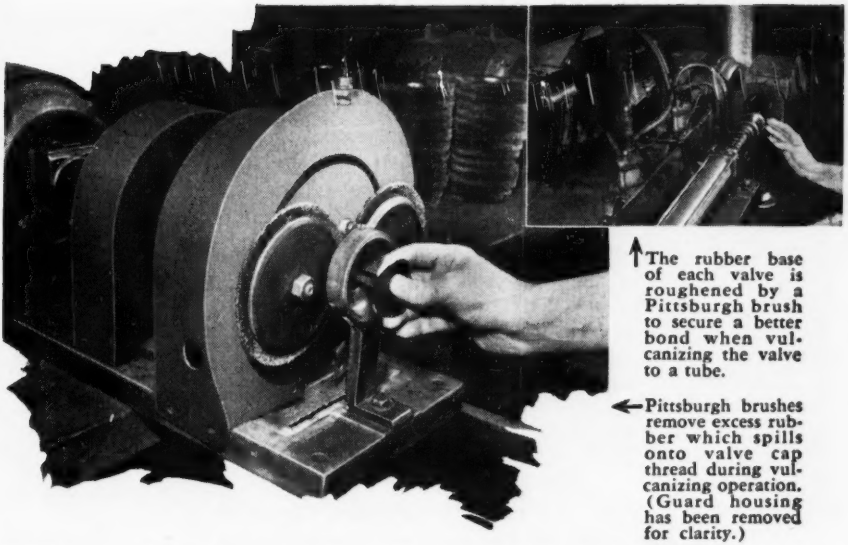
The non-allergic feature of the Griptite Neoprene gloves, which come in varying lengths and weights, is popular with workers who find it necessary to wear the gloves while working in oil, grease, gasoline, detergents, waxes, soaps and acids. In addition to being impervious to foreign matter, the Griptite finish will not peel or chip off during the entire lifetime of the gloves.

The Neoprene regular style glove comes in the light, medium and heavy weight style, ranging in length from 10½ to 18 inches. The Turn-Cuff model comes in both medium and heavy weight style, with lengths of 12 and 16 inches.

Neoprene Glove

The Turn-Cuff glove is a dual purpose glove. The cuff when turned up forms a trough which keeps liquids from running down the arm or trickling inside the glove when the wearer is reaching for the high spots.

When the cuff is turned down the wearer is given a two inch longer gauntlet. The glove is designed to the shape of the hand for smooth and comfortable fitting.



↑The rubber base of each valve is roughened by a Pittsburgh brush to secure a better bond when vulcanizing the valve to a tube.

←Pittsburgh brushes remove excess rubber which spills onto valve cap thread during vulcanizing operation. (Guard housing has been removed for clarity.)

Here's how to brush rubber

A. Schrader's Son, Brooklyn, N. Y., uses Pittsburgh brushes in the production of tire valves for leading tire manufacturers. In one operation, two brushes remove the excess rubber which flows around the valve threads during the vulcanizing process—750 valves per hour are cleaned in this manner!

Another Pittsburgh brush on a buffing machine roughens the rubber base of the valves to secure a better bond when vulcanizing the valve to a tube. In this operation, the Pittsburgh brush was chosen because it outlasts competitive makes.

WRITE TODAY for your free copy of our new booklet, that shows thru actual case histories, how Pittsburgh can help cut *your* brushing costs. Address: Pittsburgh Plate Glass Company, *Brush Div.*, Dept. W-8, 3221 Frederick Ave., Baltimore 29, Md.

PITTSBURGH

Power Driven **BRUSHES**

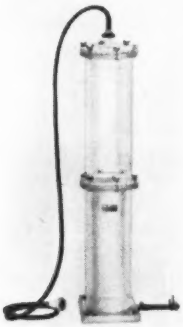
BRUSHES • PAINTS • GLASS • CHEMICALS • PLASTICS • FIBER GLASS

PITTSBURGH PLATE GLASS COMPANY

IN CANADA: CANADIAN PITTSBURGH INDUSTRIES LIMITED

Enley Pup Reactor

Chromatographic separation on a commercial scale has been made practical with an adaptation of the "Enley Pup Reactor," according to the manufacturer, Enley Products, Inc., 252 Pearl St., New York 38, N. Y.



Enley Pup Reactor

Originally designed for production of water of highest ionic purity by ion exchange, and the investigation of ion exchange and ion exclusion processes, the unit has been adopted by several manufacturers for chromatographic separation of rare earths, sugars, and antibiotics.

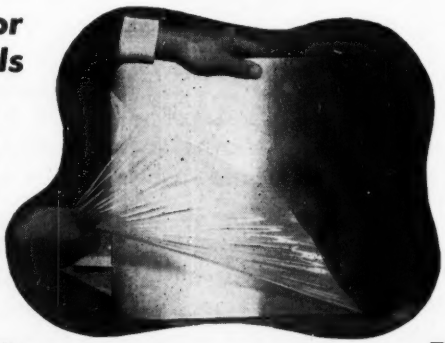
By fixing the base height and height of accessory units an unlimited fractionating column is created which, after treatment and development, may be disassembled, and the concentrated medium isolated for further treatment.

Constructed of clear high-temperature acrylic resin, the unit makes possible observation of the progress of the process at all times; and it is resistant to acids, alkalies and organics, save for the solvents affecting acrylic resins.

Although each unit is custom made in diameters of 3.5 and 6 inches, speedy delivery is possible because the components are mass produced for their originally intended usage.

A Strippable Plastic for the Protection of Metals

Striplastic is a protective plastic applied by spraying, dipping or rolling. It is used on stainless steels, high polished metal sheets, sheets in cold working or drawing, tools, dies and parts, and on sheets or metal parts before packaging. It protects against scratching and abrasion, and against rust. Also available as a booth coat protection.



THE STRIPLASTIC COMPANY
10828 QUEBEC AVE.
CLEVELAND 6, OHIO

Among many advantages, it is nontoxic, possesses great tensile strength and is easily stripped off in one piece. Write for complete information on this new strippable plastic.

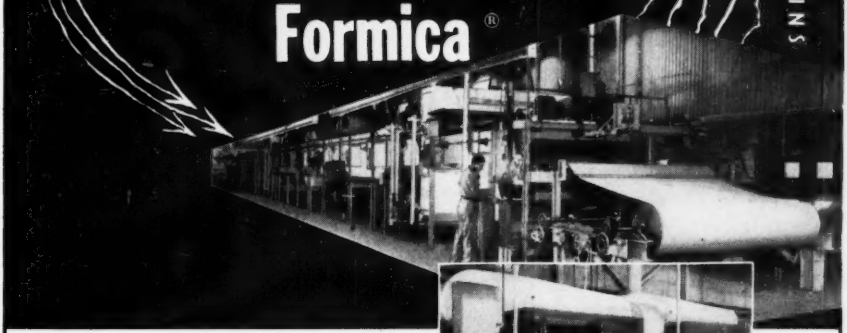
...another Controlled Baking and Drying Problem solved by

YOUNG & BERTKE

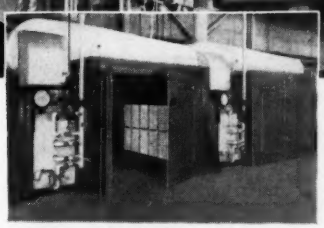
FOR

Formica®

ENAMELS • RESINS



Material is saturated with resin and then fed through this large oven and dried at a controlled speed and resin content.



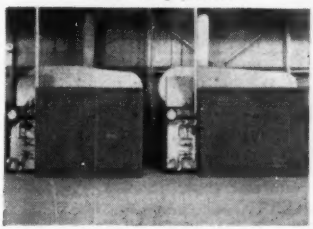
Sheets are placed in this oven and redried before being pressed.

Young & Bertke Industrial Ovens are used extensively in the manufacture of "FORMICA"® — a quality finish with beauty and endurance.

There is much more to "FORMICA" than appears on the surface.

If you contemplate a new Oven or Complete Ultra-Modern FINISHING SYSTEM, Young & Bertke is better equipped, better engineered and better qualified to determine your equipment needs. 45 years of experience in Engineering, Design, Fabrication and Installation of large and small ovens for Industrial and Laboratory use.

Write for Brochure.



Temperature controls the Manufacture of "Formica"®

LACQUERS • PAINTS & VARNISHES

The YOUNG & BERTKE Co.

OVENS • SPRAY BOOTHS • DUST AND FUME CONTROL

2291 BUCK ST. CINCINNATI 14, OHIO

Vanilene Valves

The Vanton Pump & Equipment Corp., Empire State Building, New York City, has announced the availability of corrosion resistant plastic globe and "Y" valves. Constructed entirely of polyethylene, except for the sealing diaphragm on the disc which is composed of a polyethylene-polyisobutylene mixture to insure maximum resilience and drop tightness, these valves will withstand the corrosive action of most acids, including sulphuric, hydrochloric, nitric and hydrofluoric, as well as caustic solutions.

Relatively light in weight, but high in strength, Vanilene (polyethylene) valves are recommended by the manufacturer for working pressures up to 50 p.s.i. and temperatures to 150 deg. F. At this time, ½, 1, 1½ and 2 inch sizes are available, with larger sizes soon to be announced.

Polyethylene Angle Valve

Park No. 290
BLACKENING SALT

Black Oxide finishing for rust resistance and decorative parts. Speedy black coating in water solution with no electric current. Permanent black finish on ordnance parts, tools, aircraft, bearing races. Dazzling black decorative finish for television cameras, business machines, hardware, metal screens and machine parts. Excellent bond for paints and enamels. Simple one bath operation. Write for bulletin H-16. Park Chemical Co., 8078 Military Ave., Detroit 4, Mich.

Morrison Stak-Box

Manufacturer: Morrison Steel Products, Inc., 601 Amherst St., Buffalo 7, New York.

Designed to provide a safe, as well as a time, labor, and space saving method for transporting and storing parts and materials, Morrison Stak-Boxes are constructed of heavy, formed steel frames with sides and bottom of sheets of 9-gauge, unflattened, expanded steel which provides maximum strength and load capacity for a relatively lightweight unit.

Fifty inches square at the top, 49 inches square at the bottom, with a 24 inch overall height, each box is stated to accommodate up to 7000 pounds. Four equally spaced ¼ inch by 2 inch steel reinforcement bands are welded across the bottom for strength and overall rigidity. Heavy hook plates at the

Keep safety standards **HIGH** . . . operating costs **LOW**

with **ATLANTIC** *Speed-Tested* **WHEELS**

Make sure that your snagging operation is set up for maximum productivity, lower costs and complete on-the-job safety by specifying Atlantic Speed-Tested Grinding Wheels the next time you order.

You'll find that every Atlantic Wheel made—from the 2 inch size on up—is test run at a 50% higher speed than that required for normal snagging conditions . . . that every wheel features a special Resinoid Bond for extra safety and longer wear under high operating speeds . . . that their smooth, floating action requires less pressure, makes work easy. You'll find, too, that because they seldom have to be dressed, Atlantic Wheels eliminate downtime . . . keep costs at a minimum. They cut cleaner, faster . . . run cooler. Try them and see.

Send for the complete fact-packed Atlantic Grinding Wheel Catalog now and check these important snagging advantages for yourself. Use the coupon . . . save time.

ATLANTIC ABRASIVE CORP.

South Braintree 85, Massachusetts

Atlantic Abrasive Corp.,
524 Pearl Street
South Braintree 85, Massachusetts

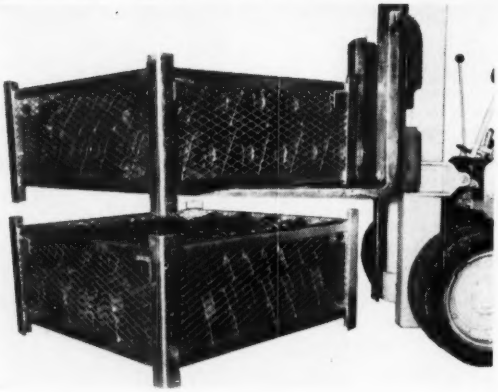
Please send me the new Atlantic Grinding Wheel Catalog

Name.....

Company.....

Street.....

City..... **State**.....



Morrison Stak-Box.

four corners provide a safe, convenient method for quickly lifting Stak-Boxes with a crane.

Automatic Wet-Blaster

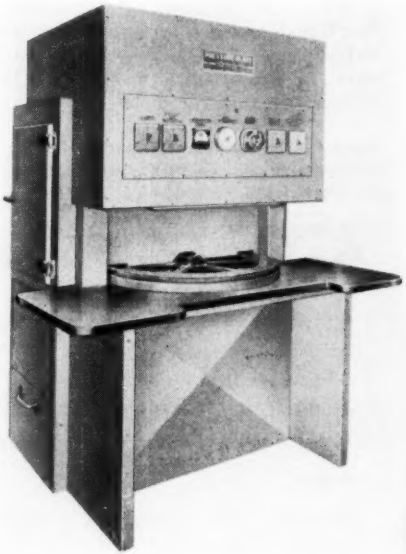
The addition of a versatile automatic model to its line of standard, manually operated units has been announced by The Cro-Plate Co., Inc., 747-6 Windsor Street, Hartford 5, Connecticut, manufacturer of Pressure Blast wet-blasting equipment.

Known as the "Pressure Blast Roto-Matic," this new concept in wet-blasting equipment was designed for the elimination of hand filing, grinding, wire brushing and chemical cleaning of small metal parts such as castings, forgings, machined items, stampings, extrusions.

The operator, seated at the front of the unit, loads and unloads work pieces from the rotating table which incorporates appropriate work holding fixtures. The cabinet interior is divided into three chambers accessible from all sides by means of inspection doors. These are: the blast chamber where fixed position guns finish the work in part or entirely; the rinse chamber where abrasive slurry is rinsed from the work; the air-dry chamber where the work pieces are dried.

A simple, readily accessible panel contains all necessary controls for operation. Included is a variable speed table drive regulator which governs the exact amount of time the work is to be blasted.

Changing from one type of work to another requires a change in work holding fixtures and a re-positioning of the blast guns. More guns may be added at any time.



Automatic Wet Blaster

Reduce costs in your paint department with these Wyandotte products!

- **PRE-FOS*** – Cleans all metals; deposits phosphate coating; increases corrosion resistance prior to painting!
- **INDUSTRIAL NO. 38** — Alkaline cleaner for maximum detergency in spray washers!
- **P-1075** — Solvent-type paint stripper for immersion use; safe on all metals!
- **NORDALL*** — Nonflammable, low-cost, emulsion cleaner for spray washers; inhibits rust on ferrous metals!
- **PHOS-IT** — Concentrated, liquid acid detergent, rust remover and metal conditioner for steel, zinc, aluminum!
- **MERSOSTRIP** — *Accelerated*, alkaline paint remover; speeds recovery of rejected parts; cleans conveying equipment!
- **444-C** — Excellent brush- or flow-on paint stripper for large nonimmersible parts or equipment; penetrates multiple coats quickly!
- **FLOTE** — Unique water-wash spray booth product; prevents sinking paint sludge and clogging; eliminates tackiness!
- **HEDRAL** — Prevents paint adhesion on spray booth walls; allows overspray removal without scraping!

* REG. U. S. PAT. OFF.

Call your local Wyandotte representative, or mail the coupon today, for technical data on this complete line of versatile paint-department products. *Wyandotte Chemicals Corporation, Wyandotte, Mich. Also Los Angeles 12, California.*

Wyandotte CHEMICALS

Helpful service representatives in 138 cities in the United States and Canada

Largest manufacturers of specialized cleaning products for business and industry

Wyandotte Chemicals Corporation
Department 2197
Wyandotte, Michigan

Please send free technical data on:

_____

☐ Please have representative call.

Name_____

Firm_____

Address_____

City & Zone_____ State_____

The Pressure Blast Roto-Matic is made of stainless steel throughout. Two blast circuits are available, either regular velocity which works on the aspiration or suction principle, and high velocity which operates on the pressure tank system, a patented feature of Pressure Blast equipment.

Alk-A-Sol

A paint stripper, designated as Alk-A-Sol, has been developed for the rapid removal of paint and synthetic resin coatings from production parts and work hangers.

Alk-A-Sol is a product of the Whitfield Chemical Company, Dept. 20-B, 14225 Schaefer Highway, Detroit 27, Mich., manufacturer of industrial metal cleaning chemicals and processes.

Used for quick removal of organic resin and pigmented coatings from steel, zinc, and magnesium alloys, Alk-A-Sol was especially developed for removing baked enamels, varnishes, and lacquers containing melamine, alkyd, methacrylate, polyamide, ureaformaldehyde, phenolformaldehyde, and Epon resins.

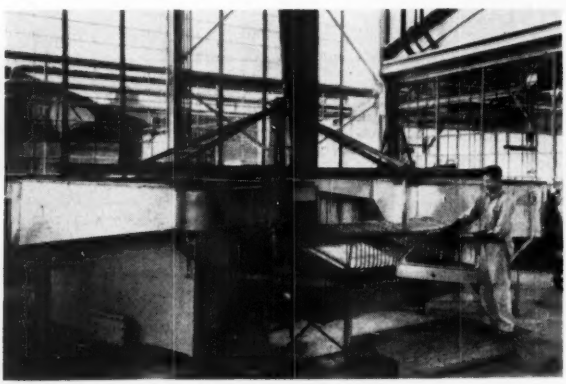
Applied in steel tank baths, a concentration of 25 to 100 per cent of Alk-A-Sol may be used at temperatures from 100 to 225 deg. F. Parts will rinse clean by spraying.

Non-flammable and non-volatile, Alk-A-Sol is available in five grades for special use with various coatings and metals.

Burring Machine

Designed to deburr, grind, and polish inside and outside surfaces with equal ease, a power-belt grinder which is available in both a bench and a portable model has been announced by United Machine Tool Co., 1902 Clyde Park Ave., S.W., Grand Rapids, Mich. The grinder is equipped with automatic belt tension, sealed bearing idler pulley and platen backing on one side for flat surface work, and unbacked belt on the opposite side for contour polishing.

The bench model is supplied with a 110-volt motor, with either a 1/3-h.p. single horizontal arm or a ½-h.p. single horizontal arm, double horizontal arm, double vertical arm, or vertical and horizontal arm. The bench model utilizes a 42 x 1-inch belt and can work holes 1¾ inches in diameter or over. The hand grinder attachment is furnished with a 1.150-inch standard mounting hole to fit pop-



Semi-automatic paint stripping unit using compact "umbrella" type machine with 5 separate stages.

Good Barrel Finishing Costs Less with The Abbott Method

It's a fact! The Abbott Method of Barrel Finishing reduces costs because it features long-lived Abbott Burnishing Shapes. Made of selected carbon steel — deep hardened — tempered and polished to a mirror-like glass hard finish, Abbott Shapes make efficient contact on all sizes and designs of stampings and castings. Abbott Burnishing Shapes last longer, burnish more parts and cost less in the long run. Used in Abbott Vertical Barrels they make an unbeatable barrel finishing combination!

For Proven Performance . . . use The ABBOTT METHOD.

Improved Abbott Barrel!

Write for details . . . today!

THE ABBOTT BALL COMPANY
1064 New Britain Ave.
Hartford 10, Conn., U.S.A.

United Portable Hand Grinder Attachment and Bench Model Burring Machine

ular makes of hand grinders and utilizes a 12 x 1-inch belt.

Paint Strainer

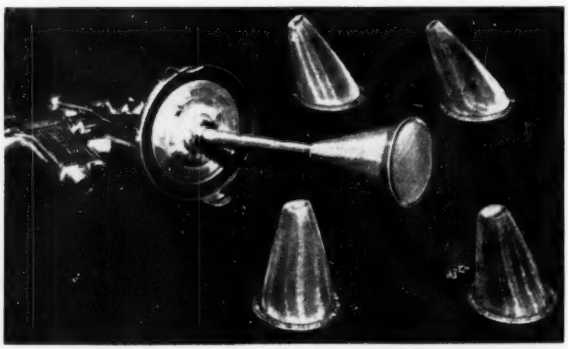
A fine gauge brass screen strainer for paint spray guns which eliminates slugs, clogging and spitting thereby reducing production costs has been developed by the Clear-Flo Strainer Co. 8050 35th Ave., N.E., Seattle, Washington.

It is a simple attachment that slides over the end of the intake tube of the spray gun permitting only pure, strained finishing material to reach the nozzle and the even flow assures a smooth and clean paint job from start to finish.

Reports from production plants indicate that an average of one man hour per gun per day is saved by the elimination of fouled nozzles.

Manufactured of fine brass screening, precision made so there can be no leaks or breaks at any joint, the strainer eliminates the use of nylon or other materials to strain the paint or finishing material before use.

There are four different sizes of Clear-Flo strainers to fit various makes of spray guns. It is self-cleaning, cleaned simultaneously with the spray gun.

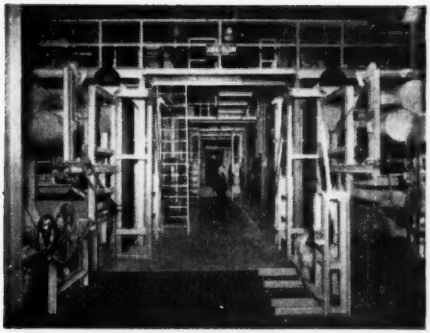


Four different sizes of a fine brass screen strainer which can be used for various makes of paint spray guns to eliminate slugs, clogging and spitting are shown here.

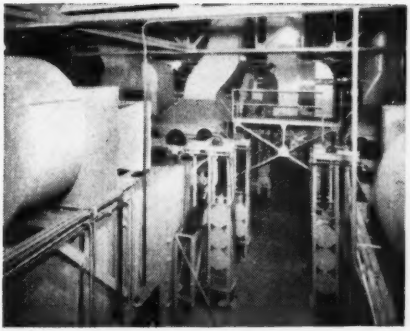
Paint Stripper

Beck Equipment Company, 3350 West 137th Street, Cleveland 11, Ohio, has announced a stripper for removing paint, lacquer, enamel and a host of other finishes from a variety of metals. Epon finishes, for instance, pop up in a matter of 20 seconds and the stripped paint can then be flushed off with water, leaving the surface clean, and when dried, ready for repainting. Econostrip does not remove the prosphate coating.

Econostrip will not attack metals. It



Rock Wool Batt Production; fibres are formed into batts, compressed to proper density and baked.



Air Heating and Handling Equipment; ovens are gas-heated, atmospheric air used for cooling.

KIRK AND BLUM

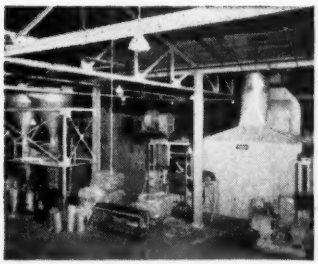
TWIN OVENS AND COOLING TUNNELS SPEED ROCK WOOL PRODUCTION

...at Philip Carey Mfg. Co., Cincinnati, Ohio

Recently installed at this noted insulation and building products manufacturer, twin KIRK & BLUM Ovens have increased rock wool production and assured continuous operation.

These specially designed three-temperature zone ovens bake the batts, setting the binder solution, and are individually adjustable for batts of varying thickness and density. Closed circuit cooling tunnels, handling 50,000 CFM of air each, completely cool the batts before packaging.

Whatever your needs in ovens...for drying, baking or dehydrating . . . consult KIRK & BLUM. There's no obligation. Write for booklet, "Industrial Ovens," showing other typical installations.



Dual Rock Wool Processing Lines; Ovens in left background and cooling tunnels at right. In left foreground is rock wool granule reclamation; particles are collected and bagged.

FOR CLEAN AIR . . . THE INVISIBLE TOOL

KIRK AND BLUM

INDUSTRIAL OVENS

The KIRK & BLUM Mfg. Co. **3116 Forrer St., Cincinnati 9, Ohio**

is especially recommended for removing paint from work holders, finishing equipment, and rejected finished parts.

Econostrip is as easy to use as water because it reduces with water up to equal parts for use. The action of the stripper swells and then loosens the old finish. The item is then rinsed with water or can be hung on the beginning of the conveyor and cleaned by regular degreasing operation.

Illustrated bulletin describing Econostrip and other strippers is available upon request.

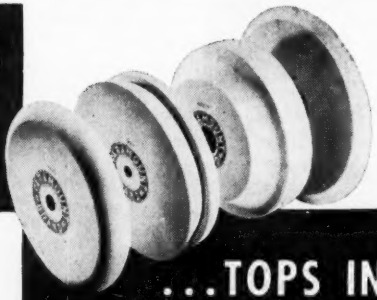
Self-Spray Metal Primer

Plasti-Kote, Inc., 425 Lakeside, N. W., Cleveland, Ohio, has announced the addition of Self-Spray Gray Metal Primer to its line of aerosol products.

Self-Spray Gray Metal Primer

This metal primer, which has a zinc chromate base, is used for painting all

PARAMOUNT BRAND
FELT WHEELS



...TOPS IN
"Contourability"

Are you finishing articles which require a wheel with a "shaped" or contoured face? Don't forget that felt wheels lend themselves to contouring probably better than any other type of wheel. Don't forget, too, you have nine degrees of hardness to choose from when you buy Bacon Felt Wheels—The Paramount Brand. Ask your supply house for Paramount Brand Felt Polish Wheels.

Send for Our New Catalog

BACON FELT COMPANY
Established 1825
TAUNTON "America's Oldest Felt Manufacturer"
MASSACHUSETTS "Felt Does It Better"

Your Supply House can Furnish Bacon PARAMOUNT BRAND FELT BOBS & WHEELS

No Heat Necessary!

Houghto Clean Saves Manufacturer $2550.00 Plus $25.85 Per Day . . .

Here's a thought for you if you're now removing oils and soils from metal parts. A large manufacturer of automobile stampings needed more cleaning capacity.

They tested the room-temperature type of Houghto-Clean in their plant on a Monday morning after letting a heavily pigmented drawing compound dry and harden over the weekend on a stack of parts. The parts were cleaned cold, with just a little Houghto-Clean added to each gallon of water. The parts came out clean.

They were able to eliminate $1,000 worth of stacks and fans, $900 worth of pipe and fittings, $650 in burner equipment and installation. What's more, they are saving an additional $25.85 per day by eliminating gas heating.

The idea is simple, isn't it? You get clean parts for lower cleaning costs . . . and, by eliminating steam and heat, have a more comfortable place for your people to work. Get the whole story on "cold" Houghto-Clean. Write today for bulletin describing Houghto-Clean for room temperature metal cleaning. E. F. Houghton & Co., 303 W. Lehigh Ave., Philadelphia 33, Pa.

* *Room temperature type*

HOUGHTO-CLEAN
. . . a product of

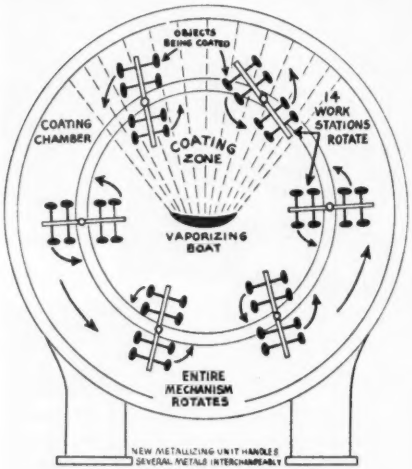
E. F. HOUGHTON & CO.
PHILADELPHIA · CHICAGO · DETROIT · SAN FRANCISCO

Ready to give you on-the-job service . . .

metal surfaces. It is available in a 12-ounce can with self-spray attachment, making it a virtual spray-gun in itself.

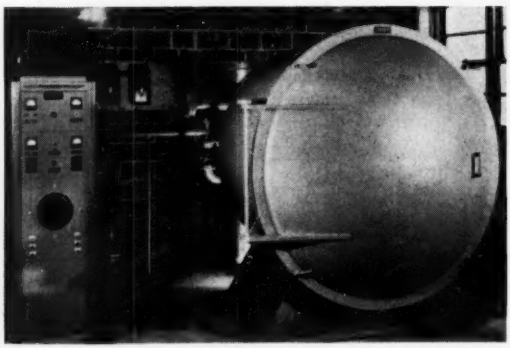
High Vacuum Metallizing Unit

The High Vacuum Equipment Corporation, Hingham, Mass., has announced the development of the first commercial high vacuum metallizing unit, specifically designed to handle gold, silver, copper and aluminum coatings on a completely interchangeable production basis with equal efficiency.



Sketch illustrating operation of coating unit.

The unit features a readily removable interior mechanism constructed as shown in the attached drawing. The metal to be evaporated is held in resistance-heated boats on the stationary rods running through on the axis of the cylindrical chamber. Silver, gold, copper or aluminum which is evaporated from the boats desperses in an upward direction through an arc of 60 to 90 degrees. The pieces to be coated are attached to the six riser rods or work stations. As this entire mechanism is rotated, each of the six work stations is successively passed through the arc of evaporating metal and the work is coated. To secure uniform and complete coverage of the work, each riser rod is also rotated independently on its own axis, thus turning all sides of each piece toward the source of evaporating metal.



High Vacuum Metallizing Unit

"Permanized" Bias Sisal Buffs

Manufacturer: American Buff Co., 2414 S. LaSalle St., Chicago 16, Illinois.

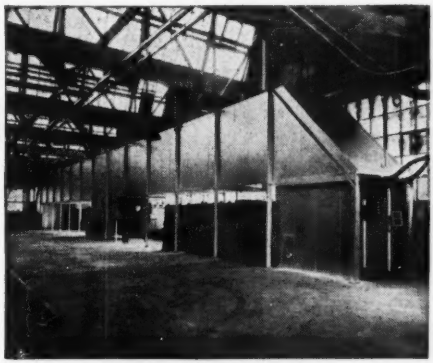
Made in Merida, Yucatan, Mexico, from new, top-grade Sisal fibre cloth, Bias Sisal Buffs are woven to company specifications employing the exclusive "permanizing" process which locks the

A *LOT MORE* THAN FANS, DUCTS, HEATERS, AND PANELS

GO INTO

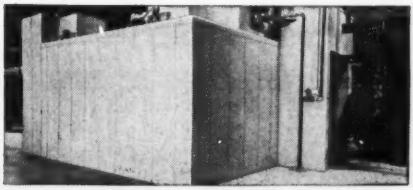
LANLY
FINISHING OVENS

● The proper adaptation and utilization of the essential component parts in every LANLY OVEN for maximum operating efficiency and economy, is a certainty being demonstrated every day in factories throughout the country. Specialized knowledge evolved from long experience and close cooperation with our customers enables us to design and erect better finishing ovens.

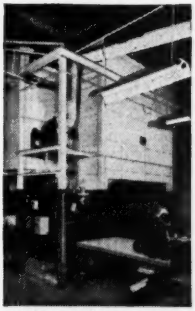


LANLY FINISHING OVEN Completely automatic LANLY A-Type Continuous Paint Baking Oven. Compact, built-in heating system affords rapid, uniform baking. Natural hot air seals at open ends. Space under oven can be utilized to advantage.

Two Continuous Laydown Dryers



Three-Pass Oven with Air Seal Vestibules

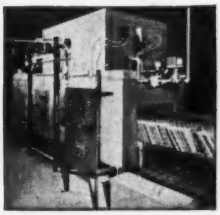


Vertical Hollow Ware Dryer

Ceiling Suspended Continuous A-Type Paint Oven

LANLY
FINISHING OVENS
THE LANLY COMPANY • 760 PROSPECT AVE
CLEVELAND, OHIO

Continuous Wicket Type Oven



Write for the NEW LANLY CATALOG

Bias Sisal Buff

sisal fibres permanently together, reduces fraying and excessive hardness.

Claimed to be always uniform as to specific weave, ranging from light to medium weights, and from loose, open weaves to very tight crest weaves, the buffs are stated to be especially adaptable for finishing stainless steel and aluminum as well as all ferrous metals. They are available in the patented centerless type, and regular styles, with permanent steel or cardboard centers.

Belmont Wet-Blast Cabinet

The Belmont Wet-Blast Cabinet, designed to remove surface contamination and produce a smooth surface on metal parts, has been developed by Vacu-Blast Co., Inc., P. O. Box 885-WB, Belmont, California.

The unit operates by agitating a

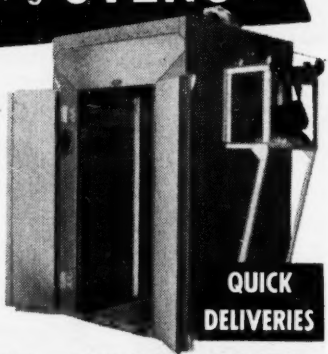
Better Uniformity..Greater Efficiency
in GEHNRICH *Standard Recirculating* OVENS
ELECTRIC · GAS · OIL · STEAM

for Baking Organic Finishes
Drying after Washing
Low Temperature Heating

Coordinated heating and air recirculation system assures safe uniform heating conditions to 500°, at minimum operating cost.

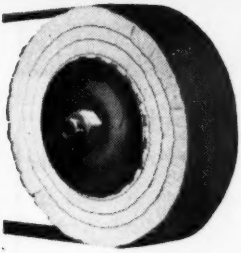
Available in truck or rack loading types — 18 sizes, as well as in bench and cabinet types — 3 sizes.

Special ovens—batch or continuous types—built to requirements.



W. S. ROCKWELL COMPANY
ROCKWELL SINCE 1888 BUILT
BUTTERFLY VALVES • SLIDE VALVES • AUTOMATIC VALVES
2904 ELIOT STREET • FAIRFIELD, CONN.
Sales Representatives in Principal Cities

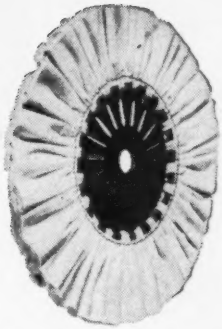
A FEW OF THE MANY FORMAX PRODUCTS



STYLE C-20 CONTACT WHEELS

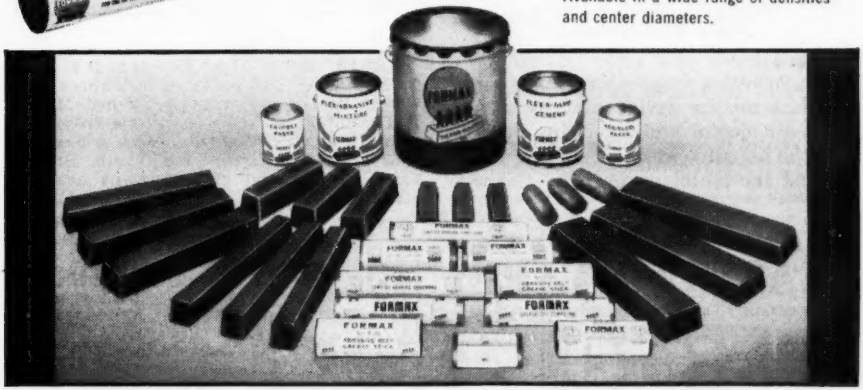
and F-26 Belt Lubricant

A C-20 flexible Contact Wheel will form itself to the shape of the work and permit the abrasive felt to polish contoured surfaces and F-26 Abrasive Belt Lubricant will increase belt life by preventing loading and glazing. Produces finer, smoother and brighter surfaces through lubrication.



ZIPPO BUFFS

These famous long-wearing buffs run cool under all buffing conditions. Constructed of high count bias-cut cloth or sisal mounted on safe steel centers. Available in a wide range of densities and center diameters.



A complete line of buffing compounds in bar form as well as in liquid form for brush or spray application. Also Flex-A-Glu polishing wheel cements.

Our Laboratory and Sales Engineering staff would welcome the opportunity to be of help in solving your finishing problems.

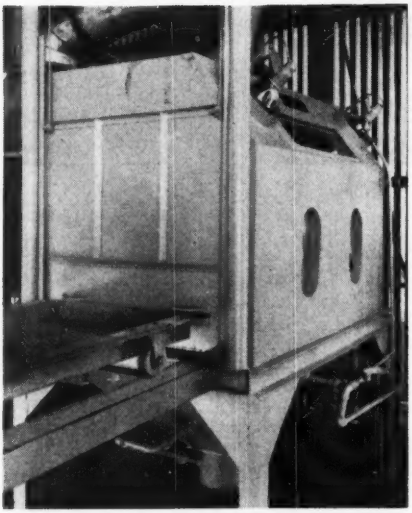
Send for descriptive literature

FORMAX MFG. CORP.

DETROIT 7, MICHIGAN

"THE FOUR McALEERS"

MANUFACTURED IN CANADA BY JOHN GALLOWAY LTD., KITCHENER, ONT.



Belmont Wet-Blast Cabinet

slurry or water suspension of fine abrasive in a mixing device, and, by means of an air ejector and blast gun, propelling the abrasive mixture at high speed against the metal parts to be cleaned.

Suggested uses for the product include the removal of heat treat scale, deburring and surface finishing prior to chromium plating, removal of directional grinding lines, and general maintenance and cleaning.

PRODUCT LITERATURE

In requesting copies of catalogs or bulletins mentioned in this issue — use the READER SERVICE CARDS between the covers.

ESBEC UNIVERSAL — MODEL B TUMBLING BARREL. A data sheet picturing and describing the Esbec Model B Tumbling Barrel is available from the manufacturer, **Tumbling Sales & Service Co.**, King St., Greenwich, Conn. Structural details and specifications are included.

MASKING TAPE
DIE-CUT TO YOUR EXACT SPECIFICATIONS FROM
SCOTCH BRAND
INDIVIDUAL PIECES • ANY SIZE OR SHAPE
For quick, accurate masking operations.
PHONE OR WRITE **PANOCO**
505 Carroll St., Brooklyn 15, N. Y.

ELIMINATE ZINC PLATING HEADACHES
by purifying your solution with
McKeon's Zinc-Brite
Write for complete information.
Sulphur Products Co., Inc.
228 McKEON WAY GREENSBURG 6, PA.

For a real good polishing job use
Keystone TURKISH Emery
FRESH SUPPLY AVAILABLE
KEYSTONE EMERY MILLS *Write for Sample* 4316 Paul St., Phila., Pa.

Cleaning Specialists*

* [SPE'CIAL·IST—One who devotes himself to some special branch of activity.]

At Northwest our "special branch of activity" is solving your cleaning problems.

Behind your friendly, competent Northwest Sales Engineer stands a reputation for providing industry with low-cost, analytically-correct, job-adjusted chemical cleaners.

From Northwest's years of experience in formulating the RIGHT cleaner for your specific needs have come such developments as the LO-HI pH PROCESS—for cleaning prior to plating, painting, or vitreous enameling; ALKALUME PROCESS—for preparing aluminum and magnesium for finishing and spot welding; INTERLOX PROCESS—for phosphate coating; SPRA-LUBE—to control over-spray of "today's" paints in water wash paint booths; PAINT STRIPPERS—specific to your needs; SUPER-DRAW & FLUID FILM—for drawing metals.

Remember—YOUR COST PER FINISHED ARTICLE IS THE TRUE COST OF YOUR CLEANER.

Northwest's production-tested chemicals and "Right the first time" recommendations will save you money. Northwest Service is as close as your phone.

NORTHWEST CHEMICAL CO.

9310 ROSELAWN DETROIT 4, MICH.

pioneers in pH cleaning control — *serving you since '32*

POLYTONE

the 1 coat hammer with the 3-D look

Depth
Durability
Dependability

SEA-LAC

It takes the feel of the finger to belie the illusion of dimension Polytone achieves. This fabulous 1-coat hammer can be baked or air-dried, and covers imperfections in one application. Available in Silver, Gold and colors. Send for samples.

Duralac Chemical Corp.
84 LISTER AVE., NEWARK 5, N. J.

ROCKWELL CATALOGS. A folder containing illustrated catalogs describing the furnaces, ovens, dryers, burners, and valves manufactured by the company is available from the **W. S. Rockwell Co.**, 2904 Eliot St., Fairfield, Conn.

The bulletins stress the many designs in which the various equipment items may be secured, and the wide application of the products in metal product finishing and manufacturing.

CHROMATE COATINGS BULLETINS. Available from **Promat Division, Poor & Co.**, 851 S. Market St., Waukegan, Ill., are informative bulletins describing **"PROMAT CHROMATE PROTECTIVE COATINGS."**

Bulletin 4-1 describes the use of Promat chromate treatments for zinc and cadmium surfaces to produce surface conversion coatings, either bright, dull, olive drab, or yellow, as desired.

Bulletin 4-2 presents complete instructions regarding the use of Promat 2080 Chrome-Type Protective Film.

Bulletin 4-3 presents complete instructions on the use of Promat D-31 General Purpose Chrome Film for zinc plated, hot dip galvanized, rolled, or die cast zinc surfaces.

Bulletin 4-4 presents complete operating instructions regarding the use of Promat D-32-A Bright Dip-Chrome-Protection Type of surface conversion treatment to produce a mirror-bright finish on plated zinc.

Bulletin 4-5 covers Promat D-33 Bright Dip-Protection Type of chromate conversion coating to produce a bright finish on plated cadmium.

Operating instructions and data for Promat Proseal No. 1 and No. 3 Treatment for Zinc Plated Parts are listed in **Bulletin 4-6.**

Bulletin 4-7 describes and sets forth the operating conditions for use of Proseal 2-A Sealer for Chrome Films for the removal of soluble chrome salts from chrome treated zinc and cadmium, and fixing of the gelatinous oxide deposit remaining.

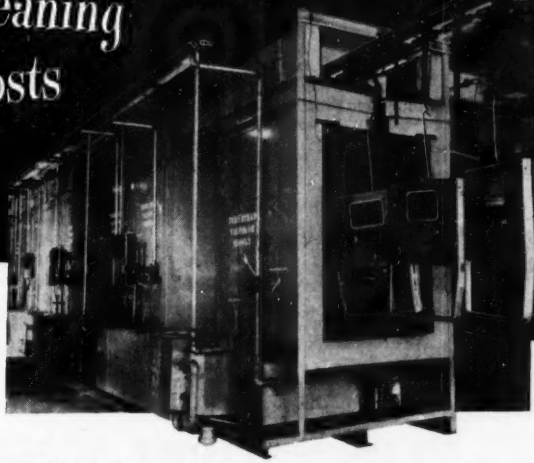
Bulletin 4-8 covers instructions on the use of Proseal 2-B Sealer for Chrome Films.

Instructions for the use of Promat Proseal 9 Chrome-Type Protective Film on Zinc and Cadmium to produce a mirror-bright finish over plated zinc or cadmium, are listed in **Bulletin 4-9.**

Bulletin 4-10 presents complete instructions regarding the use of Promat Proseal 10 Chrome-Type Protective Film on

Do a Better Job Faster...

cut cleaning costs RIGHT DOWN THE LINE!



METALWASH Phosphatizing Machine at the AUTOCAR DIVISION of the WHITE MOTOR CO.

METALWASH Phosphatizing Machine provides superior pre-paint surface at PROVEN COST SAVINGS

METALWASH designs and manufactures a complete line of pre-paint machines for Phosphatizing, Bonderizing, and Alodizing.

METALWASH-designed Phosphatizing Machines are available for every application from the simple *phosphate-cleaner* to the multi-stage *wash, rinse, phosphate coat, rinse, acid rinse,* and *dry* machines.

"... with our **METALWASH** *Phosphatizing Machine we have achieved substantial product improvement and considerable cost saving, together with elimination of paint failures in the field,"* states Robert Hood, Supervisor of Mfg. Research of the Autocar Division of the White Motor Co.

METALWASH VAPOR DEGREASERS *provide new speed, economy, durability.*

METALWASH SPOTLESS DRYER *eliminates hand-wiping of lacquered or plated parts.*

METALWASH TRIPOLI REMOVER *automatically removes tripoli and rouge.*

METALWASH®

WASHING PICKLING DRYING PHOSPHATIZING DEGREASING

METALWASH MACHINERY CORPORATION
915 North Avenue, Elizabeth 4, N. J.

Cadmium to provide an olive-drab film of low reflecting power, high corrosion and abrasion resistance.

Bulletin 4-11 describes and lists formula, equipment necessary, and operational data, for the use of Promat Proseal 6 Chrome-Type Protective Films on Zinc and Cadmium to produce a bright finish over plated zinc.

CELLUSUEDE FLOCK BULLETIN. An illustrated 12-page bulletin describing the wide variety of uses and methods of application for decorator flock is available from **Cellusuede Products Inc.**, 500 N. Madison Street, Rockford, Illinois, producer of natural and synthetic flock. The bulletin is designed to provide valuable general information to design and application engineers as well as others who wish to explore the uses of flock or plan new, improved production methods.

Contents include a description of the various types of flock fibers and tneir wide range of uses, an explanation of proper adhesive selection and application, and a discussion of the principal methods of applying flock to a surface, complete with schematic drawings and illustrations. A ready-reference chart provides complete physical properties and characteristics of cotton and viscose rayon fibers.

ELECTRIC HEATING BULLETIN. Principal heating applications and methods are described in a new 32-page booklet, "101 **WAYS TO APPLY ELECTRIC HEAT,"** by **Edwin L. Wiegand Co.**, Pittsburgh, Pa., manufacturer of Chromalox electric heating units.

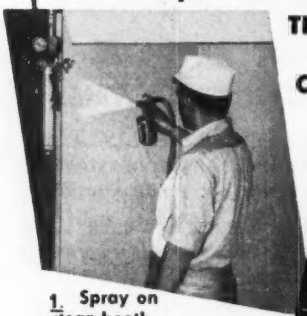
Illustrated case histories show experience-tested ways to apply metal-sheathed electric heating units in many industrial jobs. Physical aspects of installation are shown along with a description of the problem, solution and advantages obtained. Some of the heating jobs illustrated could not be done with any

Be sure of your spray booth mask

PROX-PEEL* SPRAY BOOTH MASK

This formula has, for years, satisfied more shops than any other liquid mask

TIME AND MONEY SAVING
SIMPLE • FAST
COMPLETELY DEPENDABLE



1. Spray on clean booth . . . no paper dolls, no grease daubing!

ADVANTAGES
Ready to use — at normal pressures.
No special reducer or equipment required.
Excellent mileage.
Fireproof film.
Improved illumination.

2. Once a week or when dirty, peel the booth clean — solid sheet — dirt and all!

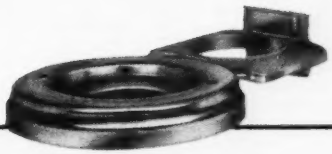
No scraping—no grease paper. Order a trial gallon at the drum price from your dealer — or from

PAOLI, PENNA.
WICHITA, KANSAS

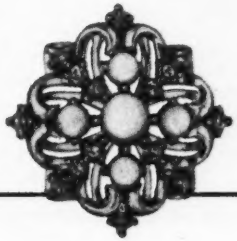
PYROXYLIN PRODUCTS, Inc.
CHICAGO 32

*T.M. Reg. U. S. Pat. Off.

die casting



stamping



slush casting

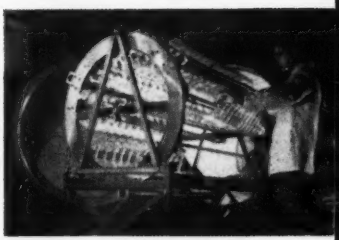
No matter how you make it here's the economical way to metallize it

These items were all made by different processes, but all have one thing in common—a bright shiny surface. And the finish was put there quickly, easily, and using practically no coating metal.

You do such finishing jobs in a *CVC* high vacuum coater. The process works well even on base metals. Inexpensive, readily available aluminum is used to make it shiny—you can get colors such as gold by using a dyed lacquer topcoat. And you get a mirror-like finish without hand buffing.

If you have any metal items you would like to see vacuum coated, send them to us. We'll look them over and if they appear to have possibilities we'll coat samples for you at no charge. When you've seen the results, we can discuss equipment to meet the production rates you require.

Send your samples or write for descriptive literature to ***Consolidated Vacuum Corporation, Rochester 3, N. Y.*** (a subsidiary of Consolidated Engineering Corporation, Pasadena, California).



This is CVC's Model LC1-48A vacuum coater. Other standard models are available. All come equipped with the controls, electrical circuits, and measuring instruments you need for fast, easy operation.

CVC

formerly DPi Vacuum Equipment Dept.

Consolidated Vacuum Corporation

Rochester 3, N.Y.

designers and manufacturers of high vacuum equipment

Sales offices: Palo Alto, Calif. • Chicago, Ill • Camden, N. J. • New York, N. Y.

fuel except electricity—just as no other heat can match the job done by electric blankets.

To illustrate liquid heating, for example, diagrams, photographs and captions show why contact-type strip, ring or tubular elements are chosen—while immersion or circulation heaters are more desirable in other cases.

Similiar treatment is given to problems of heating air and gases; melting soft metals and viscous materials, and heating machinery and equipment parts, such as dies, platens, molds and moving parts. Other types of heating jobs are covered by industry, and include applications in metal finishing, plastics, chemicals, foundries and electroplating. A section is devoted to far-infrared heating, showing 28 typical uses for this new method.

For a free copy of the new Chromalox Booklet, write to **Edwin L. Wiegand Co.**, 7552 Thomas Blvd., Pittsburgh 8, Pa.

FILTER BULLETIN. Available from **Murray-Way Corp.**, Box 130, Birmingham, Mich., is **BULLETIN F-5301** describing the Murray-Way Industrial Filter, designed for rapid, efficient removal of solid contamination from solutions of various kinds. Details of operation of the filter and advantages gained through its use are listed in the bulletin. Data concerning standard filter screens supplied with the unit are included.

ZINCILATE BULLETIN. A bulletin illustrated by a number of photographs showing widely diversified uses for Zincilate*, a self,-protecting and anti-corrosion coating, is available from **Industrial Metal Protectives, Inc.**, 401 Homestead Ave., Dayton 8, Ohio.

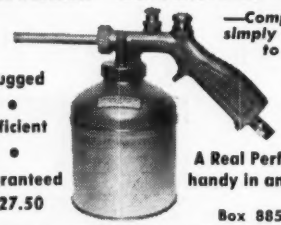
Designated as **BULLETIN Z-853**, the folder describes the corrosion resistant characteristics of Zincilate, outlining proper methods of metal surface preparation for coating, and describing a number of successful coating methods.

Several Zincilate formulations are available to provide corrosion protection under various conditions of exposure and desired application methods. This factual data is presented in easy-to-read chart form in the bulletin. The chart includes information on uses, surface preparation, application methods, drying, and special features of the coating.

* Registered Trademark.

WYANDOTTE PRODUCTS FOR THE METAL WORKING AND FINISHING INDUSTRIES. A brochure being distributed by **Wyandotte Chemicals Corp.**, Wyandotte, Mich., presents condensed information about the application of Wyandotte products to the many clean-

Portable Sandblast Gun



—Complete— simply connect to air line

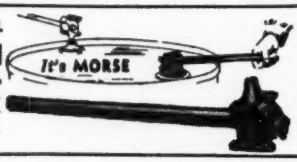
Rugged • Efficient • Guaranteed $27.50

A Real Performer handy in any shop

LINDBERG PRODUCTS CO., Box 885 P Los Gatos, Calif.

Send NOW for this FIT-ALL DRUM PLUG WRENCH

Instantly loosens, tightens 95% all plugs or bungs in steel drums. Has 16" extra-strong steel tubing handle. Wgt. only 2 lbs. Order 1 or more today!



THOUSANDS IN USE saving time, labor, accidents! SATISFACTION GUARANTEED.... $3.30

Non-sparking type .... $5.10 Plus Parcel Post

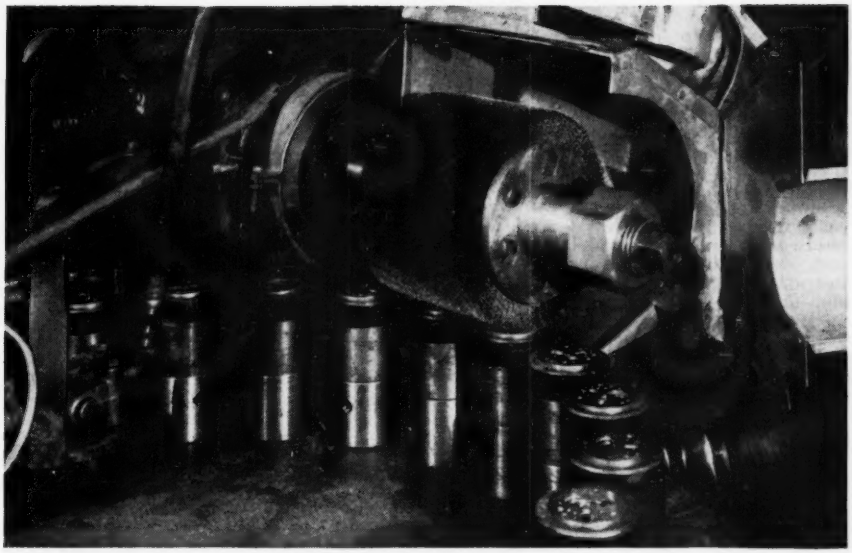
MORSE MFG. CO., Inc. 762 W. Manlius St., E. Syracuse, N. Y.

DON'T BE FOOLED BY FALSE CLAIMS

ROBERTS ROUGE COMPANY STRATFORD, CONN. Originators of Micro-Lustre Finishers

★ Fine buffing compounds are a combination of the best of materials and years of manufacturing experience.

Since 1881 A LONG TIME TO CONTINUE SUCCESSFULLY



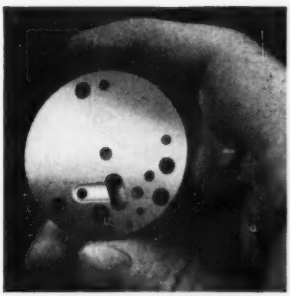
How to brush down finishing costs *automatically*

Power Brushing finishes both sides of these brass discs at a rate of 15,000 per machine per eight-hour day. It does a better, more uniform job many times faster than hand methods.

Parts are placed on spindles which rotate at 60 r.p.m. The table also turns at about one revolution in 25 seconds bringing the Osborn Economy® Section Brushes into contact with each part in turn. Spindles stop rotating as they approach the loading station, where a mechanism lifts finished parts and air pressure blows them into a chute.

A similar automatic operation with Osborn Power Brushing may improve the quality and speed of *your* cleaning, finishing and deburring operations . . . whether you process large parts or small . . . made of metallic or non-metallic materials. Ask your nearby **O**sborn **B**rushing **A**nalyst to appraise *your* possibilities. Write to *The Osborn Manufacturing Company, Dept. O-14, 5401 Hamilton Avenue, Cleveland 14, Ohio.*

FREE: New booklet on deburring with Osborn Power Brushing. Ask for your copy.



The finished part. Osborn Power Brushing removes feather burrs and blends surface junctures.

Osborn Brushes

OSBORN

OSBORN BRUSHING METHODS • POWER, MAINTENANCE AND PAINT BRUSHES • BRUSHING MACHINES • FOUNDRY MOLDING MACHINES

ing, washing, and surface treating processes involved in metal product manufacture and finishing. The information is grouped according to the basic industries concerned, the applications of Wyandotte products in processing metal for that industry being described.

Each process or data sheet lists the industry concerned and presents the information under three headings: process, product, application.

Cleaning and surface treating processes concerned with the following operations are described in the brochure: aircraft manufacture, aircraft modification and maintenance, barrel finishing, electrocleaning, rotary-type washing machine cleaning, soak cleaning, spray-type washing machine cleaning, steam gun cleaning, tumble cleaning, and water wash paint spray booth maintenance.

AUTOMATIC BUFFING MACHINE BULLETIN. An illustrated bulletin describing construction and operational features of the Uniflex Automatic Buffing Machine is available from **Harper Buffing Machine Co.**, Portland, Conn.

The versatile buffing machine accomplishes its purpose through the action of a horizontal, conveyorized work table and a number of individually adjustable buffs, each fitted with an automatic compound applicator.

Included among the advantages claimed for the automatic buffing machine are its rugged construction, precision control of each operation through push button operating controls, and individual work drives at each buffing wheel.

The movement of the work can be changed from continuous travel to a smooth, shockfree, indexing motion, at any interval and for any amount of dwell.

The bulletin further points out the adaptability and expansion possibilities of the machine to further stress its versatility.

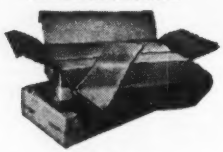
CONVEYOR BELTS. BULLETIN No. 105. A folder listing typical uses of Cambridge Woven Wire Conveyor Belts in several industries is available from **The Cambridge Wire Cloth Co.**, Cambridge 9, Maryland. Installation photos included.

For Dust Free Finishes!

BOND TACK CLOTH

IN ROLLS

Cut off any size piece to use as needed.



IN BULK

Cut and folded. Ready to use.

STAYS SOFT AND TACKY — A SPECK-FREE FINISH EVERY TIME

Now Available in Rolls or Cut Bulk—White or Gold In Three Different Types of Cloth

Get your Tack Cloth packed just the way it's easiest for you to use . . . either in 150 yard rolls of 36" wide cloth or in handy cartons . . . 100 or more Tack Cloths to the carton.

No matter which way you buy it, you can be sure that every square inch will stay SOFT and TACKY until the very last bit is used up!

The Cut Bulk size is 18" x 36" . . . folded to 4½" x 18" for ease of handling. ALL BOND TACK CLOTH is *Spontaneous Combustion Proof, Lint-Free* and *Wax-Free*. Gives a sparkling speck-free Finish *every time*. Clean and sanitary. No waste.

TRY THEM and COMPARE RESULTS. Samples Gladly Sent Upon Request.

BOND CHEMICAL PRODUCTS CO.

"The Tacky Wiper Specialists"

2639 N. CLYBOURN AVE. CHICAGO 14, ILLINOIS

ALSO INDIVIDUALLY PACKED IN GLASSINE ENVELOPES —144 to the Carton

A WARRANTY OF SATISFACTION IN EVERY CARTON

HARSHAW ANODES and CHEMICALS

You can depend on Harshaw products to keep your production moving. For more than fifty years we have concentrated on improving the quality of the anodes and chemicals used by platers.

NICKEL PLATING

. . . still and barrel . . . nickel anodes—all commercial grades and sizes . . . anode bags . . . single nickel salts—nickel chloride . . . nickel carbonate . . . nickel fluoborate . . . boric acid.

CHROMIUM PLATING

. . . pure "Krome Flake" 99.8% CrO_3 . . . sulphates less than .10% . . . lead, tin-lead and antimony-lead anodes.

COPPER PLATING

. . . copper ball anodes . . . Rochelle Salts . . . sodium and copper cyanides . . . copper sulfate . . . copper fluoborate.

CADMIUM PLATING

. . . ball and cast cadmium anodes . . . cadmium oxide . . . sodium cyanide . . . cadmium fluoborate.

TIN PLATING

. . . cast tin anodes . . . sodium stannate . . . stannous sulfate . . . tin fluoborate . . . acid tin addition agent.

ZINC PLATING

. . . ball and cast zinc anodes . . . sodium and zinc cyanide . . . zinc sulfate . . . zinc fluoborate.

LEAD PLATING

. . . cast lead anodes . . . lead fluoborate.

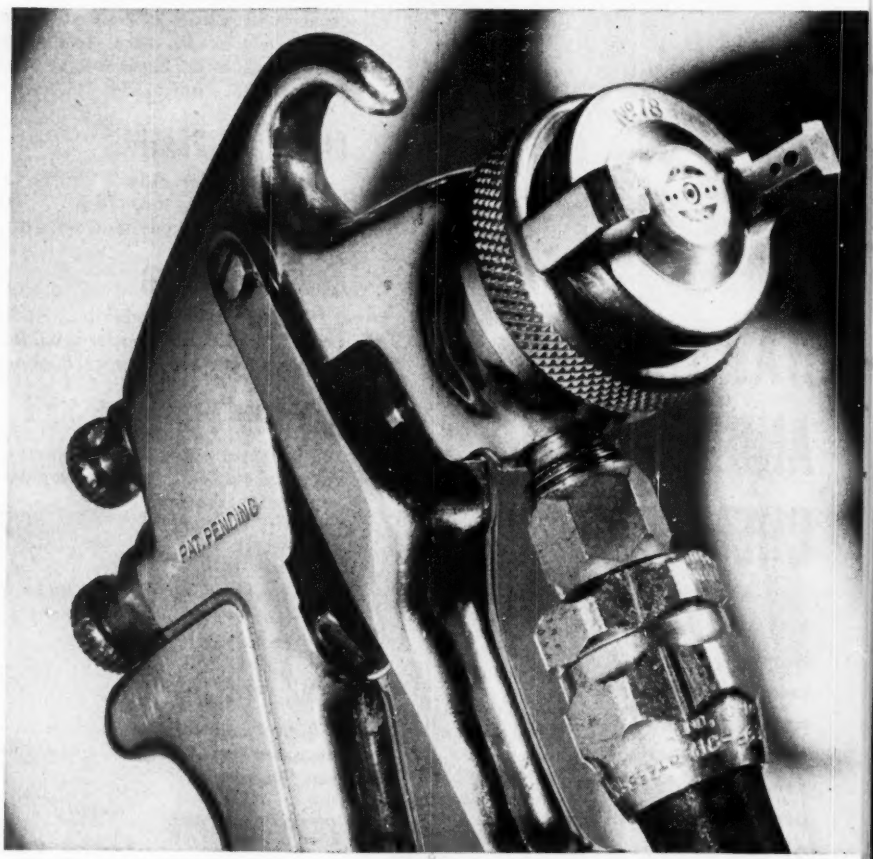
SILVER PLATING

. . . silver cyanide.

The HARSHAW CHEMICAL Co., Cleveland 6, Ohio

Chicago 10, Ill. • Cincinnati 13, Ohio • Detroit 28, Mich. • Houston 11, Texas
Los Angeles 22, Calif. • Philadelphia 48, Pa. • Pittsburgh 22, Pa. • New York 17, N. Y.

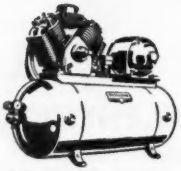
New! A High-Quality,



New No. 78 Air Cap for DeVilbiss Spray Guns.

Spray Guns

Air Compressors



Hose and Connections

BRANCH OFFICES AND DISTRIBUTORS IN PRINCIPAL CITIES THROUGHOUT

High-Production Air Cap

For superior finishes, clean operation even at highest rates of production — try the New DeVilbiss 78 Air Cap.

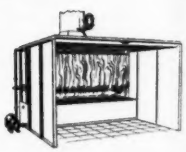
Here it is! A high-production air cap that gives you finest quality finishes, *yet stays clean!*

The No. 78 Air Cap for DeVilbiss Spray Guns employs a new degree of atomization, which produces much better flow-out and gloss after paint particles are deposited on the surface you're painting. Because it operates at lower air pressure, you consume less air. You also conserve material because overspray is reduced.

It handles synthetics and lacquers in a viscosity range of 18 to 26 seconds (No. 4 Ford Cup) and will atomize materials at a flow rate of 31 to 42 fluid ounces per minute. Its 12-15" spray pattern puts out a full wet coat. You get a finer finish with fewer passes.

For superior finishes at production-line speed, nothing can top a DeVilbiss Spray Gun equipped with the new No. 78 Air Cap . . . that stays clean in service! Prove it for yourself! Ask your DeVilbiss supplier for a free demonstration.

THE DEVILBISS COMPANY
Toledo, Ohio
Santa Clara, Calif. • Barrie, Ontario • London, England



Spray Booths

FOR BETTER SERVICE, BUY
DEVILBISS

THE UNITED STATES, CANADA AND THE WORLD

NEWS of the Industry

NEW PLANTS

The **CARPENTER - MORTON CO.**, manufacturer of Carmote Paint products, has announced the opening of a new general office at 376 Third St., Everett 49, Massachusetts.

The new office consolidates sales and accounting services formerly carried on in two locations and will create a greater operating efficiency than previously possible.

The **DETREX CORPORATION** of Detroit, manufacturer of industrial cleaning equipment, chemicals, and drycleaning machines, has announced the completion of a new branch warehouse and office in suburban Los Angeles.

Doubling the size of former facilities, the new Detrex branch is situated on approximately one acre of ground at 3027 Fruitland Ave., Vernon, California. Of Norman brick trim with Boquet stone pillars, the building encloses 10,500 square feet of warehouse, drumming plant, and offices. The new headquarters contains a railroad siding on the property for receiving shipments from Detrex plants in Detroit and Tacoma, Wash., a truck loading dock with modern conveyorized materials handling system, and a unique drumming system utilizing an electric eye for accurate filling of 53-gallon drums of solvent. This branch serves as headquarters for a staff of eight service and sales engineers serving Pacific region industrial and drycleaning accounts.

COMPANIES

Martin F. Tiernan, Chairman of the Board, has announced that on January 1, 1954, the merger of the associated companies, **WALLACE AND TIERNAN CO., INC.** and **NOVADEL-AGENE CORPORATION**, into a single organization known as **WALLACE & TIERNAN INC.**, was completed. Stock of the new company is listed on the American Stock Exchange. Subsidiaries include W. C. Hardesty Co., Inc., Richmond Manu-

Los Angeles branch office and warehouse, Detrex Corporation.

Harmonious—

Lines alone may sell a product — but *covering* is important, too! And when these two elements are blended — just so — the resulting harmony sings the sweet music of dollars earned and selling future assured . . . Because the selection of a product finish is so important, it pays to consult specialists for advice. Rockford Varnish Company technicians can help you by recommending the proper stock coating, or by developing a custom-coating for *your* product requirements alone. They'll work with you to harmonize the perfect finish with the features of the products you offer . . .

Research, Quality, Service

ROCKFORD VARNISH *Company*
ROCKFORD, ILLINOIS
Manufacturers of Protective and Decorative Coatings

Affiliate
GORDON BARTELS CO.
Roller Coating Specialists

facturing Company, Thomson Machine Co., Electro Rust-Proofing Corp. (N. J.), and Wallace and Tiernan Ltd.

The new company s principal lines of activity include: Wallace & Tiernan chlorinators, water purification apparatus, chemical feeders and materials handling equipment, processes for treating fresh produce, electrical specialties, lighthouse equipment, precision pressure sensitive instruments and ethical pharmaceuticals; Novadel organic peroxides and equipment and processes for treating flour; Richmond sifters and separating equipment; Hardesty fatty acids and pasticizers; Thomson bakery equipment; and Electro Rust-Proofing cathodic protection services.

Wallace & Tiernan is best known in the water treatment field through its chlorinators and chemical feeding equipment, which have been used by municipal and industrial water works, sewage and waste treatment plants for over 40 years.

Principal plants are located at Belleville, N. J.; Buffalo, N. Y.; Genesee, N. Y.; Dover, Ohio; Toronto, Canada; and London, England.

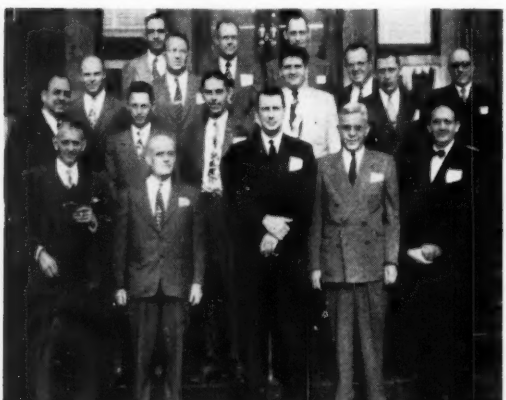
What's new and what's ahead in paintmaking was the general topic of 26 individual round-table sessions held during a three-day technical conference at the plant and laboratories of **THE ARCO COMPANY**, Cleveland, Ohio, manufacturer of paints and industrial finishes.

More than 110 participants from fourteen affiliates of the American-Marietta Company attended to discuss recent developments in appliance finishing, synthetic resins for paints, furniture and industrial enamels, latex wall coatings and a number of other topics bearing on the chemistry and techniques of paint production. Conferees came to Cleveland from American-Marietta affiliates located at points as distant as Los Angeles, Ottawa, Canada, and High Point, N. C.

Discussions were under the direction of R. E. Pflaumer, American-Marietta vice president and director of research. The meeting was also attended by H. J. Hemingway, president of American Marietta Company, K. E. Clarke, American-Marietta vice president and president of Arco, and V. Muir Rogers, American-Marietta vice president.

Two recent American-Marietta acquisitions were represented by conferees from Lamar Pipe & Tile Company, Grand Rapids, Mich., and Universal Concrete Products Company, Columbus, Ohio. The addition of these two companies to the American-Marietta family makes A-M the largest producer of concrete sewerpipe in the country.

Other companies represented were: The Arco Company, The Ferbert-Schorndorfer Company and Master Builders Company, all of Cleveland; Keystone Asphalt Products Co., Chicago Heights; Marietta



Technical directors and executives of fourteen American-Marietta affiliates meet at the plant of The Arco Company.

Front row (left to right)—Claude Watson, O.P.W. Paints, Ltd., Ottawa, Canada; G. B. Sawyer, Ferbert - Schorndorfer Co., Cleveland; R. A. Pflaumer, vice president and director of research, American-Marietta Company, Chicago; Emil Spoerry, Jr., vice president and Dr. D. M. Gans, technical director, The Arco Company.

Second row — R. H. MacCormic, American-Marietta Co., Chicago; J. A. Friday, Sewall Paint & Varnish Co., Dallas; L. A. Owen, American-Marietta Co., Kankakee, Ill.

Third row — A. J. Porter of The Chas. R. Long, Jr. Co., Louisville, Ky.; John F. Rooney, American-Marietta Company, Kankakee, Ill; T. E. McKelveny, Sewall Paint & Varnish Co., Kansas City; Raymond Swain, American-Marietta Company, Kankakee; Harold Beckwith, American-Marietta Company, Kankakee; J. R. Murray, Sewell Paint & Varnish Company, Dallas.

Top row—E. J. Davis, Marietta Paint & Color Co., High Point, N. C.; J. F. Wynn, Marietta Paint & Color Co., Marietta, Ohio; and R. C. Cole, OPW Paints, Ltd., Ottawa, Canada.

The Hardy Mfg. Co. of Indiana uses the above equipment and the SMOOTHEX Process to increase their plating production.

EVERY USER OF THE NEW SMOOTHEX BRIGHT COPPER PROCESS* Has Increased Production!

You can do it too with this new, revolutionary, high-speed process. It's easier to control, faster and more economical in both large scale or average job shop production. You can achieve top quality more profitable plating solutions and increase your production by using your present equipment.

SMOOTHEX Assures Maximum Brightness • Throwing Power • Plating Speed

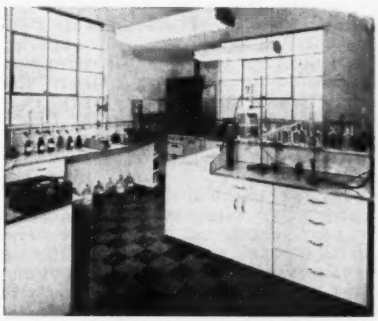
It provides an instant sparkling brilliance that occurs at the beginning of the plating cycle in a Rochelle Cyanide Copper Solution. It has exceptional speed of deposition and excellent throwing power. Brightness is achieved over a much greater range . . . from zero to eighty amperes per square foot. Ductile deposits and low copper concentrations are featured in this process. Periodic reverse or intermitting current may be applied to the SMOOTHEX process.

The SMOOTHEX Process Is

98% **EFFICIENT**

IT ELIMINATES COPPER BUFFING and SAVES NICKEL.

HAS • EASE OF CONTROL • INSTANT SPECULAR BRIGHTNESS • LOW MAINTENANCE COST • LOW OPERATING COST • ADAPTABILITY



A Modern, Well-Equipped Laboratory Is at Your Service to Convert Other Processes to SMOOTHEX.

Send Your Sample Solution for Conversion Information **TO**

*Pat. Pend.

SMOOTHEX, inc.

10705 BRIGGS ROAD
CLEVELAND 11, OHIO

EXCELLENT TERRITORIES STILL AVAILABLE

Paint & Color Company, High Point, N. C. and Marietta, Ohio; Sewall Paint & Varnish Company, Kansas City and Dallas, Texas; Berry Brothers Co., Detroit; India Paint & Lacquer Co., Los Angeles; Chas. R. Long, Jr. Company, Louisville; Metals Disintegrating Company, Elizabeth, N. J.; American-Marietta Company of Chicago and Kankakee, Ill.; American-Marietta Company of Canada, Ltd.; and OPW Paints, Ltd., of Ottawa, Canada.

James F. Carland

During almost half a century of growth, **CHANDEYSSON ELECTRIC COMPANY**, St. Louis, Mo., has consistently made an effort to maintain the best of relations with its workers. Dr. Pierre Chandeysson, founder of the firm, was well-known as a pioneer in improving labor-management relations. This policy has paid off for the company in more ways than one. Today the massive motor-generators made by Chandeysson for use in metal plating, anodizing, electro-polishing, and electrotyping processes enjoy an enviable reputation for precision workmanship, made possible in large part by the extra efforts of skilled Chandeysson workers. At the same time it was building a reputation for superior products in the industry, Chandeysson was also building a reputation in the community as a good place to work. Percentage of employee turnover at Chandeysson is far below industry average.

Following the death of Dr. Chandeysson, James F. Carland joined the company as executive vice-president. One of his first functions was a meeting with representatives of the workers' union to discuss wages. At that time a one-year contract was signed providing various economic benefits in line with the pattern then current. However, six months after the union contracts were signed, the company's sales and production and profits began a steady rise. Though they were not legally obliged to do so, Chandeysson executives decided to cut the workers in on their extra income. They called in Larry Connors, business representative of Machinists Union District 9 and informed him that they were prepared to increase hourly wage rates up to eighteen cents per hour in various classifications — bringing the wages of ninety-three (93) workers above the industry average.

In addition to a higher than average wage rate, Chandeysson is one of the few firms which pay the entire cost of the salaried employees' medical and hospital insurance. This benefit, too, was provided voluntarily by the company. Other "fringe" benefits include paid holidays and vacations, modern safety measures, and food service truck in the plant.

CARPENTER-MORTON COMPANY, manufacturer of Carmote paints and varnishes, has announced the retirement on December 31st, 1953, of Silvanus Smith, who had been associated with the company for over 51 years. He had been in charge of industrial sales development and production since 1934.

Mr. Smith has served on several committees for both the National and New England Paint, Varnish and Lacquer Associations, and is a past president of the Paint Salesmen's Club of New England.

Sales problems encountered during the past year and methods for surmounting them in 1954 was one of the chief topics under discussion at the annual national sales conference of the **GLIDDEN COMPANY'S** Chemicals-Pigments-Metals Division in Baltimore December 28-29.

Chairman of the meeting was J. P. Ruth, Glidden vice president and general manager of the division, who presented plans to the sales group for improving Glidden's position in the chemical, pigment and metal markets during the coming year.

Other key speakers were Ralph B. Quelos, the Glidden division's general sales manager, who reviewed sales procedures and methods, and G. M. Halsey, director of manufacturing, who outlined the division's 1954 production program.

Highlighting the conference was a technical discussion of the Chemicals-Pigments-Metals division's products by Dr. B. W. Allan, technical director. Plant tours and laboratory demonstrations were also conducted under Dr. Allan's direction.

On the evening of December 28, the annual President's Awards Dinner was held, during which the division's top

What stainless steel black finishing specifications are required for your production?

INVESTIGATE

BLACK MAGIC S. S.

for Stainless Steel, cast and malleable irons

Here is a low temperature, one salt, one bath blackening process which provides an attractive black finish that becomes an integral part of the metal surface and will not chip, flake or peel.

Important Features of BLACK MAGIC S.S.

One bath	Good abrasive Resistance
One salt	Attractive Black Finish
Low temperature 255°F	Economical to apply
Excellent Corrosion Resistance	Will not chip, flake or peel.

Send your samples for processing in our laboratory. Literature available for your examination. Write Today.

Mitchell-Bradford

Manufacturers of Metal Finishing Processes, Rust Preventatives and Heat Treating Salts

THE MITCHELL BRADFORD CHEMICAL CO.

2446 D Main St. Stratford, Conn.

QUALITY PRODUCTS OF CHEMICAL RESEARCH

salesmen for the past year were honored for their achievements.

Agreement has been reached for **THE CARBORUNDUM COMPANY** to acquire the capital stock of the Stupakoff Ceramic and Manufacturing Company of Latrobe, Pa., according to an announcement by Major General Clinton F. Robinson, president of Carborundum in Niagara Falls, New York.

General Robinson said Stupakoff Ceramic and Manufacturing will continue operations under its present name and the present organization and personnel will be retained under the direction of Mr. Semon H. Stupakoff, president of the Company. Stupakoff manufactures ceramic and other components used in the electrical and electronic industries.

Carborundum's present Globar Division manufactures electric heating elements and resistors.

Holder of many "firsts" for plating industry inventions, **THE UDYLITE CORPORATION** has just announced completion of its 600th full automatic plating machine. John V. Davis, chief engineer who designed the machine, (left), and Clyde H. Reeme, president, look on as Lawrence V. Nagle, executive vice president, illustrates the purpose of the machine by using a plated Zippo cigarette lighter.

This machine was built to copper-nickel-chromium plate steel and brass lighter cases for the Zippo Manufacturing Co., of Bradford, Pa. It is 99 feet in length and has 35 stations for processing.

A new, six-member group of sales representatives has been picked by **LOWE BROS. CO.**, Dayton, Ohio, paint manufacturer, to serve on its 1954 Management Advisory council. The new council will meet with management and sales executives to exchange ideas on products, customer relations, and sales.

Lowe Bros. salesmen are rated according to their performance records and sales achievements, the top man in each district being selected to serve on the council. Members of the new council are: **J. L. Chaney**, central district; **S. V. Clyde**, eastern; **D. B. Estey**, New England; **H. J. Karl**, north central; **H. Simmons**, southern, and **M. D. Gregory**, southwest.

NEW POSITIONS

Appointment of **JOHN S. CORT, JR.**, as sales manager of Diamond Alkali Company's Chromium Chemicals Division has been announced by Frank W. Jarvis, general manager of the division.

Mr. Cort succeeds Charles E. Grant, divisional sales manager since 1948, who has resigned to join Butler Manufacturing Company, Kansas City, Mo., steel fabricator.

Mr. Cort comes to his new post at Diamond's national headquarters in Cleveland from Kearny, N. J., where he has been assistant manager of the company's

Udylite's 600th full automatic plating machine.

BEFORE YOU SAY "WE DON'T NEED IT"

LOOK INTO ALL THE ADVANTAGES OF

ALL THESE ROHCO PRODUCTS!

FOR ZINC PLATING

- ☐ ROHCO 100 BARREL ZINC BRIGHTENER for brilliant deposits, maximum coverage and lowest cost.
- ☐ ROHCO 303 STILL ZINC BRIGHTENER for highest luster zinc, used with or without conversion or bright dips.
- ☐ ROHCO ZINC PURIFIER to keep baths in tip-top shape.
- ☐ NO-FLASH to control foaming and explosions in most baths and alkaline cleaners (except chrome).

FOR CADMIUM PLATING

- ☐ ROHCO 20XL (Liquid or Powder) gives brightest cadmium; minimizes cadmium consumption by improving uniformity of deposit.
- ☐ ROHCO 50XL (Powder) for highest production rates of bright cadmium.
- ☐ AIRCRAFT BLACK CADMIUM PROCESS for adherent, attractive blackening of cadmium.

FOR CHROMIUM PLATING

- ☐ ROHCO NO-CRO-MIST® safeguards workers' health by eliminating chrome fumes, solves ventilating and heating problems; saves chromic acid.
- ☐ ROHCO RINS-AID sheds water; prevents chrome stain; improves drying.
- ☐ CHROMETER — a special hydrometer which gives direct chromic acid content at the bath operating temperature.
- ☐ HULL CELLS AND RECTIFIERS for speedy, positive catalyst control.

FOR ALL PLATING

- ☐ ROHCO RINS-AID sheds water; improves drying; prevents staining.
- ☐ COMET RECTIFIER is the newest, most convenient rectifier; dual range 6 and 30 amperes, perfect voltage control, filtered output, automatic timer. Other rectifiers are B-1000 and B-267.
- ☐ ROHCO CURRENT TESTER enables platers to detect and correct the hidden troubles of rectifiers that ordinary meters don't indicate.
- ☐ HANGING HULL CELL is a new device for making plating tests under production conditions.
- ☐ HULL CELL UNITS of high temperature lucite. The new Model "WT" complete with immersion heater and built-in thermostat; 267 ml. HULL CELL; 1000 ml. HULL CELL; the new electric HULL CELL AGITATOR.
- ☐ ANODES: Cast of various metals.
- ☐ CATHODES: Zinc Plated No. 3 finish or polished brass.

◀ JUST CHECK AND SEND FOR INFORMATION, *Today!*

R. O. HULL & COMPANY, INC.

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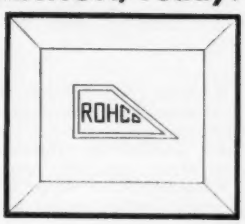


Chromium Chemicals Plant for the past five years. Previously, he had been identified with the operations of the Diamond Silicate Plant at Cincinnati.

George W. Egger

GEORGE W. EGGER has been appointed a sales engineer of the Udylite Corporation, it was announced by L. J. George, Udylite Chicago district manager.

Mr. Egger has been assigned to the Chicago branch office and will serve the territory of Chicago, Aurora and Elgin, Ill.

He has a bachelor of chemical engineering degree from Ohio State University and formerly was with a chemical firm and an insurance company.

Announcement has been made of the election of **HAROLD E. COLLINS** as vice president of Metals Disintegrating Co., Elizabeth, N. J.

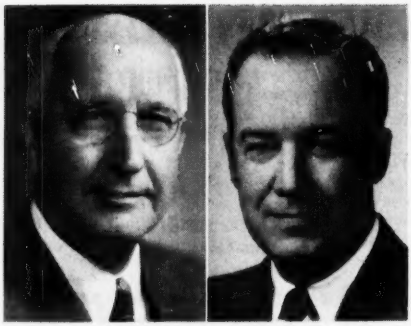
Mr. Collins will handle the company's operations in its Pigments and Abrasives Divisions. In his former capacity he was sales manager of the Pigments Division.

A graduate of the Massachusetts Institute of Technology, Mr. Collins has been associated with Metals Disintegrating since it acquired the Harrison Abrasive Division in 1946.

WILLIAM O. FAXON has been elected a vice president in charge of Manufacturing. Formerly Works Manager of Metals Disintegrating's Harrison Abrasive Division at Manchester, N. H., Mr. Faxon will have charge of manufacturing in the company's four plants, at Berkeley and Emeryville, Calif., Elizabeth, N. J., and Manchester, N. H. He is a graduate of Harvard University.

JAMES BECKETT has been elected executive vice president of Interchemical Corporation, manufacturer of printing inks, industrial finishes, textile colors and other chemical coatings.

CHARLES W. SCOTT will succeed Mr. Beckett as divisional president of Interchemical's Finishes Division.



James Beckett (left), Charles W. Scott

Mr. Beckett joined Interchemical in 1929 as manager of its Chicago printing ink factory. Mr. Scott has been with Interchemical since 1940.

RICHARD C. BOOTH was recently appointed to the Technical Service staff of Wyandotte Chemicals' Pacific Coast plant. The announcement was made by Donald E. Anderson, Director of Technical Service of the J. B. Ford Division of the Wyandotte, Michigan, organization.

Richard C. Booth

Mr. Booth graduated in chemistry from San Diego State College. He has been employed as a paint chemist and as a process engineer by two well known California firms. He is a member of the American Chemical Society and the Society of Aeronautical Materials and Process Engineers.

Pacific Coast users of cleaning and germicidal materials have available, through the Los Angeles laboratories where Mr. Booth will headquarter, the more than 50 years of recorded case histories on file with Wyandotte Chemicals' Technical Service Department.

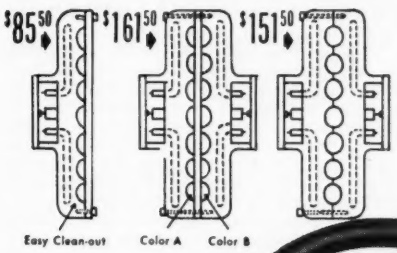
Michigan Chrome & Chemical Company of Detroit, Michigan, has announc-

NOW...GREATER PERFORMANCE and ECONOMY THAN EVER!

in spraying HOT PAINT on all finishes.

3 METHODS OF OPERATION

SINGLE COLOR — TWO COLOR — DOUBLE CAPACITY



REVOLUTIONARY DESIGN

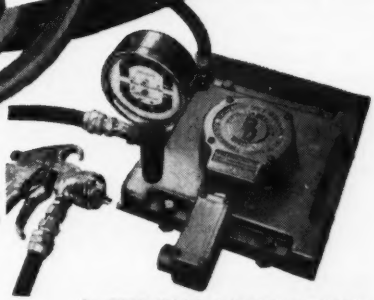
now provides greater simplicity, efficiency, and safety for continuous or intermittent applications, fixed or mobile.

THE BEDE "ECON-O-MATIC" PAINT HEATER

The New Model E Series at a new low price
Another example of Bede Leadership

The only heater of its type with built-in, time-tested Bede performance and safety, plus these important new advantages...

- ★ **Greater reservoir of latent heat**
- ★ **Greater heating capacity**
- ★ **Greater heat transfer efficiency**
- ★ **Quick, easy clean-out**
- ★ **Adjustable thermostat for accurate temperature control**
- ★ **Versatility of multiple units**
- ★ **Steady (adjustable) air power**



the BEDE MODEL E "ECON-O-MATIC"
Non-circulating
(standard) Paint Heater
Where circulation is not necessary
$85.50

the BEDE MODEL E "ECON-O-MATIC"
Circulating Paint Heater
for larger, steady applications
$199.50

Optional Mounting Bracket and Conveyaroll Dolly
EASY TO INSTALL
For descriptive literature, write or phone your local distributor
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BEDE PRODUCTS Inc.
Industrial Finishing Equipment
1110 Brookpark Road, Cleveland 9, Ohio
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WORLD'S LARGEST MANUFACTURER OF INDUSTRIAL PAINT HEATERS

ed the appointment of **EARL KUNISH** to its sales territory embracing Missouri, Iowa, Southern Indiana and Southern Illinois. His activities will include sales and service work on Michigan Chrome & Chemical's complete line of rack coating and stop-off materials for the electroplating industry as well as specialized vinyl plastisol coatings.

Prior to completing a training program in Michigan Chrome & Chemical's Laboratory and Plants, Mr. Kunish had considerable industrial experience as a process engineer at Shellar Engineering and Kaiser-Fraser.

Mr. Kunish will headquarter in St. Louis, Missouri.

MEETINGS

For the first time in seventeen years, the **NEW YORK BRANCH** will play host to the **AMERICAN ELECTROPLATERS' SOCIETY** at the **ANNUAL CONVENTION** to be held July 12 through 15, 1954 at the Hotel Statler.

The Ladies' Committee has prepared what promises to be a most full and entertaining week for the women attending the convention.

On Sunday, July 11, the "get-together" party has been scheduled for the early registrants. An outstanding film on New York City by Terry Manos, entitled "The Twenty-Four Dollar Purchase," will be shown. Refreshments will be served following the film.

Monday morning will bring the official opening to the convention and will feature talks by outstanding personalities. A tea party will be given on Monday afternoon, the feature of the tea being a talk of great interest to the ladies. Monday night will feature the Fellowship Open House with one of the leading orchestras of the country and food galore. This party will be sponsored by the Metal Finishing Suppliers' Association.

On Tuesday, July 13, Oakite Products will once again sponsor the "Aunt Ella" luncheon, which is always one of the annual highlights of the convention. It will be held at the famous Tavern on the Green, and will feature Dave Clarin as Aunt Ella. In the evening, the Udylite Corporation will sponsor an evening's entertainment at a leading Broadway play.

Wednesday, July 14, will be "Outing Day." A pleasant sail up the Hudson to Bear Mountain has been planned with the following activities: luncheon, the East-West ball game, swimming, and boating. The complete day will be under the sponsorship of the Frederick Gumm Chemical Company. This outing is for all men and women registered at the convention.

Thursday will bring visits to the U.N. or Radio City, both of which are sponsored by the Bart-Messing and Sel-Rex Corporations. Also on Thursday, Joan Wiarda will act as hostess at the annual "Plato Party." Gifts and prizes will be given at the party. The Grand Banquet will be held Thursday evening, featuring an excellent meal, an all-star Broadway review and dancing.

Souvenirs and gifts will be given during the convention. One which has already been pledged by the Rapid Electric Company, an orchid to each lady, will be given the night of the final banquet. Cocktail parties will be given throughout the convention.

Standing (left to right), Mesdames Mildred Hartshorn, Winnie Herrmann, Ethel Braun Rose Schneidt, and Bess Nadel. Seated (left to right), Mesdames Yolande Fusco; Margaret MacStoker; Molly Cates; Barbara Schore, Chairman; Edith Goldwasser; and Betty Cinamon.

Come to TUMBLE GRAV-I-FLO FINISH

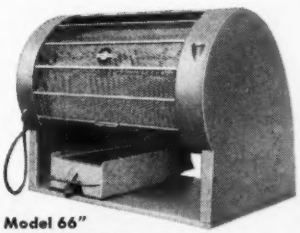
. . . For Higher Lustre — Smoother Finish On Metal Parts

Get a superior finish on metal parts with Super-Brite chips and compounds employed in the Grav-i-Flo Tumbling Process. These materials cut faster, eliminate need of transferring parts between roughing and finishing, and end subsequent operations such as ball burnishing.

Grav-i-Flo cuts direct labor costs, too. Hundreds of companies are getting better finishing and deburring results, faster and cheaper. Check these advantages to improve your competitive position today!

Grav-i-Flo Offers Complete Equipment and Supplies For All Your Tumbling Needs!

Machines—5 sizes—66″, 48″, 36″, 32″ and 24″. Cam locked doors with safety stop; unlined or rubber lined; constant or variable speed; J.I.C. controls; timers 5 min. to 20 hrs.; electric wiring and water piping.



Model 66″
Two compartments

Compounds—Natural and synthetic deburring and finishing chips and highly developed compounds outperform every type of tumbling process offered.

Accessories — Separator and chip grader, hoist pans, chip pans, washout doors, screens, chip bins, unloading boots, dip tanks.

Investigate — Our representative will visit your plant; or send samples direct to us. Engineering Service available to all users.

SEND FOR CATALOG showing complete line of Grav-i-Flo equipment, accessories and supplies.

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THE GRAV-I-FLO CORPORATION 400 NORWOOD AVENUE STURGIS, MICHIGAN

HONORS

John A. Carter (left), R. J. Colvin

John A. Carter, president of Oakite Products, Inc., presented the 1953 D. C. Ball Award to **R. J. COLVIN**, Syracuse, New York, representative of the firm, one of the nation's leading manufacturers of industrial cleaning and related materials.

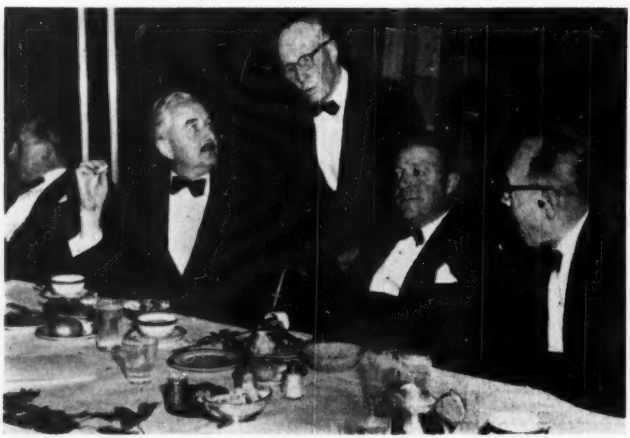
The award, presented annually in memory of the firm's founder to the Oakite representative who has rendered exceptional service to industry, was made at the regional technical-sales conference held at New York's Roosevelt Hotel in December.

With the Award of Honor flag for an outstanding safety record currently flying over **FERRO CORPORATION'S** plant at Cleveland, Ohio, C. D. Clawson, Ferro president, has announced the completion of an entire year of operations without a single lost-time accident.

To commenmorate 365 operating days comprising 1,277,937 man-hours with no accident-caused lost time, Ferro has presented inscribed ball-point pens to all company employees in appreciation of their cooperation towards achieving the perfect safety record. The inscription reads "Ferro Corp., Cleveland Plant. One year of operation without a disabling accident. 1953."

Mr. Clawson stated, "We hope to continue to warrant the title of 'Best In Industry' by maintaining an excellent record of safety. Our employees deserve commendation for keeping Ferro a truly safe place in which to work."

Prior to distributing the gifts to all Ferro personnel, William N. Noble, manager of operations, presented the first pen to Anthony Simon, president of Local 1170, United Steel Workers' Union, who represented the Ferro employees. Also present at the ceremony was R. W. Frank, safe-

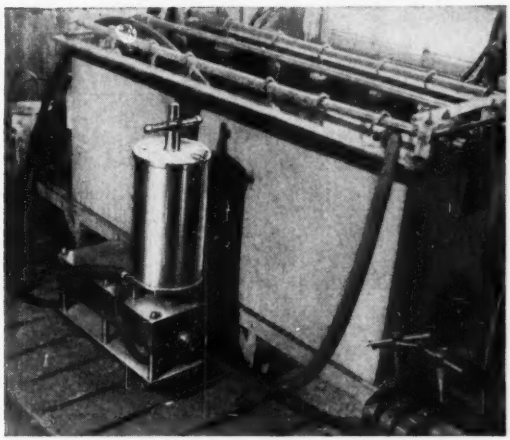


A group of business associates recently honored **W. Joseph Cluff**, president of the Frederic B. Stevens, Inc., (center), on his 70th birthday at a party in the Detroit Athletic Club. With him here are (left to right) Walter E. Otto, president of Michigan Mutual Liability Co.; John D. Scofield, Udylite Corporation lawyer and a director; Arnold F. Malow, president of Barton-Malow Construction Company; and Clyde H. Reeme, president of Udylite.

A "This Is Your Life" transcription and slide film presentation traced Cluff's active business and civic career from birth on through his long association with the Stevens firm, now a subsidiary of the Udylite Corporation. Cluff has been with Stevens for more than 50 years.

Here's how to cut your losses

get better finished plated work — save time and labor



The *"Sealed-Disc"* Filter will remove all dirt, dust, and sludge from your plating solutions. You will no longer worry about pitting, spotting, poor adhesion, formation of nodules, etc.

More and more platers testify to the remarkable savings in operating time and labor that the *"Sealed-Disc"* Filter gives them. These cost-minded platers get better finished plated work and have found that their solutions last l o n g e r. *"Sealed-Disc"* Filters, designed to meet plating room requirements, are smaller, more compact and portable, than ordinary conventional filters.

Regardless of the size or type of your installation, there's a *"Sealed-Disc"* Filter to "fit your job". You can depend on a *"Sealed-Disc"* Filter for positive, trouble-free performance that's proof against even the invisible impurities that cause nodules and porousness, proof against losses caused by rejects and reworking. Write for complete details or contact your regular plating supplier.

ALSOP

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Other Alsop Plating Room Equipment

We manufacture a full line of Mixers and Agitators covering a complete range of sizes, for mixing, blending, and dissolving. Stainless Steel Mixing Tanks are also available in a wide range of capacities. For full details and illustrations write for your free catalog.

(Left to right) R. W. Frank, safety director; William N. Noble, manager of operations; Anthony Simon, Local 1170 president; Barney Sobeleski.

ty director and Ferro's oldest employee in years of service, Barney Sobeleski, a receiving clerk.

At a Dec. 22 dinner at the University Club in New York, **LOUIS M. HAGUE**, president of Hanson-Van Winkle-Munning Company, Matawan, N. J., was presented with a gold watch by his fellow directors and a pair of silver candelabra by the corporation in commemoration of 25 years with the firm. Hanson-Van Winkle-Munning Company engineers and manufactures equipment and supplies for the metal finishing and metal plating fields. The presentation was made by Van Winkle Todd, chairman of the board, and was attended by board members.

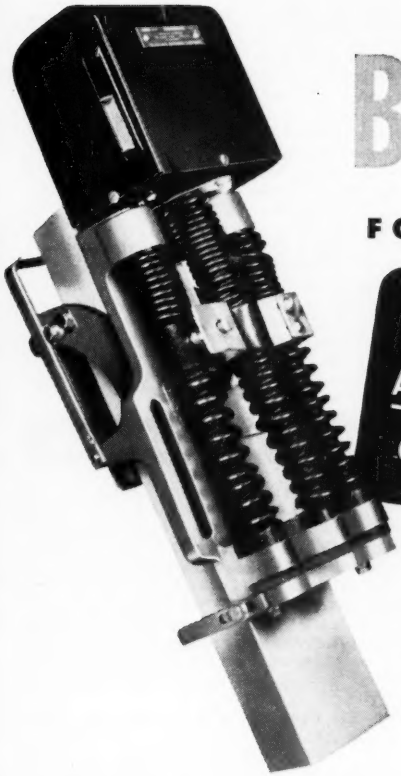
Mr. Hague started with H-VW-M in 1928 as a salesman out of the Pittsburgh office. Prior to joining the firm, he had completed nearly 12 years in the industry, starting as an apprentice in his father's job plating shop. Both his father and grandfather were in the plating field, specializing in silver work.

In 1929 Mr. Hague became district manager of the Cleveland office and in 1930 assistant eastern sales manager. From 1932 to 1935 he handled special sales assignments in various offices. In 1935 he was put in charge of polishing sales and services and in 1939 became sales manager, vice-president and director. He was elected president in 1948.

Mr. Hague's other activities include membership in the American Electroplaters' Society; American Ordnance Association; Presidents Council, American Institute of Management; Industrial Brush Section of WPB (World War II); and Primary Consumers of Nickel for Chemicals and Electroplating Industry Advisory Committee (present). He is a World War I veteran, and a former Mayor of Rumson, N. J.

In summarizing advances made during the last 25 years, Mr. Hague pointed out that the industry has expanded more

Van Winkle Todd (left), Louis M. Hague



Brand New!

FOR BETTER BUFFING

The Nankervis Air-Operated Automatic Compound Applicator

X STROKES PER MINUTE

(X — The number of strokes your buffing operation calls for—indexed by work, platen, electric timer, foot switch, cam, etc.)

You, too, can cash in on all of the advantages of automatic compound application—earn substantial savings in material and time; have a cleaner buffing department as well.

The Nankervis air-operated automatic compound applicator provides all of these advantages and more!

Because it is flexible, you use compound only when it's needed. The number of times the compound actually touches the wheel depends upon the buffing operation involved. *That, alone, adds up to real savings.* The applicator is actuated either mechanically, electrically or manually; feeds just the right amount of compound; not too much, not too little.

It's ideal for multiple operation, too. All the applicators on an entire buffing line can be operated simultaneously from a single three-way valve.

The entire story is contained in the new Nankervis booklet covering the air-operated compound applicator. Write for Bulletin No. 6-600—*today!*

GEORGE J. Nankervis COMPANY

EQUIPMENT AND SUPPLIES FOR THE METAL FINISHING INDUSTRY

19255 WEST DAVISON AVENUE • DETROIT 23, MICHIGAN

than 500 per cent, and referred to the return of more brilliant decorative finishing and the trend toward more fully automatic loading, processing and unloading facilities in the larger installations.

DR. GEORGE DUBPERNELL, manager of the Waterbury Laboratories of United Chromium, Incorporated and one of the leading authorities in the field of electroplating was honored at a luncheon at the Hotel Barclay in New York recently. The celebration marked Dr. Dubpernell's admission to membership in the Twenty Year Club of United Chromium, Incorporated.

Dr. Dubpernell is best known for his contributions, many of which are patented, in the chromium plating field. He was co-inventor of a chromium plating barrel which has gained wide acceptance as an improved means for economical chromium plating of small parts. Through his many articles, papers, and book reviews, Dr. Dubpernell has become an internationally recognized authority on electroplating. He has also assembled one of the world's best private libraries on electroplating.

More than half of Dr. Dubpernell's books are collectors' items, some being more than 100 years old. The library, started in 1920, now contains about 500 books on plating and related subjects printed in English, German, French, Italian, Spanish, Russian, Dutch, Swedish, and Norwegian. His library also includes unusually complete sets of technical periodicals and also originals or photostatic copies of practically every paper, article, or patent on the subject of chromium plating published prior to 1935 and the most important material published since that date.

Dr. Dubpernell was graduated in 1924 from the University of Michigan where he was associated with Professor E. M. Baker. He then worked and studied under Dr. Colin G. Fink at Columbia University, receiving the A.M. degree from that institution in 1927. Returning to the University of Michigan, he studied under Professor A. L. Ferguson and earned the Ph.D. degree in 1933 for work on overvoltage.

TRAINING COURSES

The schedule for the first half of 1954 is being announced by the **DEVILBISS COMPANY** for courses of instruction in industrial spray finishing methods in its School of Spray Painting.

Applications should be made as early as possible for enrolling foremen, shop superintendents, spray operators, maintenance supervisors and any others who wish to attend the one-week classes as follows:

Jan. 11, Feb. 8, Mar. 15, Apr. 26, May 24, June 21.

These classes will be held at the modern school headquarters adjoining the company's main plant in Toledo. The school is now in its twenty-eighth year of operation.

Applications for all classes on the new schedule should be sent now to the DeVilbiss Com-

Dr. George Dubpernell (left), manager of the Waterbury laboratories of United Chromium, accepts watch presented to him by President Richard O. Loengard in honor of Dr. Dubpernell's entry into the Twenty Year Club of United Chromium.

pany, Toledo 1, Ohio. Those interested may request School Form INS-753-A. No charge is made for attending, the only expenses being for transportation, board and lodging.

FREE COURSE IN ELECTROPLATING. The Spring term in Electroplating at the **BROOKLYN EVENING TECHNICAL HIGH SCHOOL**, 29 Fort Greene Place, Brooklyn 17, N. Y., begins February 1, 1954.

Classroom discussion and laboratory experiments are included in the course. Individual experiments in the methods of analysis of copper, nickel, chromium and silver baths are performed, additional laboratory work covers anodizing, Hull cell operation, plating on plastics and thickness measurement by chemical methods of zinc, cadmium, nickel, chromium. Classroom topics include a review of the fundamentals of elementary chemistry, tank area calculations, Baume and specific gravity readings, brighteners, wetting agents, buffer agents, pitting, deionizing.

Classes meet Monday and Wednesday nights from 6:45 to 8:15 P.M. plus about six Friday nights during the term which runs from February 1 to June 30.

Registration begins January 25, 1954, and daily thereafter from 7:00 to 9:00 P.M. See Mr. Serota, room BW17 or 3E12.

meetings OF INTEREST TO FINISHERS

Feb. 13. Interim Meeting, A.E.S., 10:00 A.M., Royal York Hotel, Toronto, Ontario, Canada.

Feb. 27. Dayton Branch, A.E.S., Ninth Annual Educational Session and Dinner Dance, Dayton Biltmore Hotel, Dayton, Ohio.

Mar. 15-19. Tenth Annual Conference and Exhibition, National Association of Corrosion Engineers. Kansas City, Mo. For further information contact A. B. Campbell, Executive Secretary, NACE, 1061 M & M Bldg., Houston 2, Texas.

Mar. 24-Apr. 1. American Chemical Society, 125th National Meeting, Kansas City, Mo.

Apr. 3. A.E.S. First Annual Tri-State Regional Meeting, Hotel Sheraton-Gibson, Cincinnati, Ohio. Sponsored by Cincinnati, Columbus, Indianapolis, and Louisville Branches.

Apr. 21-24. Fourth International Conference on Electrodeposition and Metal Finishing, sponsored by **The International Council for Electrodeposition.** Hotel Russell, London, England.

Apr. 27. Association of Consulting Chemists and Chemical Engineers, Inc., Symposium and Banquet, Hotel Belmont Plaza, New York, N. Y. For further information contact A. B. Bowers, Director of Publicity of the Association, 50 East 41st St., New York 17, N. Y.

May 2-6. Electrochemical Society, Spring Meeting, LaSalle Hotel, Chicago, Ill. Technical sessions will include papers on electric insulation, electronics, electro-organic chemistry, industrial electrolytics, and theoretical electrochemistry.

Jul. 12-15. 41st Annual Convention American Electroplaters' Society, Hotel Statler, New York City.

AGATEEN

Can You Top This!

"MILEAGE PLUS"

With 30X Clear Bake

The country's foremost flash-light manufacturer* reports finishing over 55,000 2-battery flash-lights with less than 15 gallons net of mixed AGATEEN 30 X Clear Baking Lacquer. We repeat "Can You Top This?"

* Name on request.

Minimum orders accepted.

Agate Lacquer Mfg. Co., Inc.

Serving industry since 1927

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Long Island City, N. Y.

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AGATEEN

THE LAST WORD IN QUALITY

SOCIETIES

The trustees of the **METAL FINISHING SUPPLIERS' ASSOCIATION, INC.,**

held a special board meeting on the afternoon of December 19, in the Robert Treat Hotel in Newark, N. J.

While the chief purpose of the meeting was a year-end appraisal of the activities of the Corporation during 1953, much time was devoted to plans for 1954, with particular consideration being given to the part that the MFSA will play in the coming A.E.S. Convention in New York City this summer. A number of committees of the two organizations are already collaborating in an effort to make this affair memorable and most successful.

Although it may seem premature to some, the meeting also heard a report on the hotel situation in Cleveland where the 1955 Annual Convention is scheduled to be held, and T. A. Trumbour of the Open House Committee was authorized to take steps to make proper arrangements to accommodate the functions of the MFSA there at that time.

The treasurer reported the Corporation to be financially in the soundest position in its 30 year history.

REPRINTS AVAILABLE

"Chemical Surface Treatment Extends the Durability of KoolVent All-Weather Aluminum Awnings."
by Norman P. Gentieu,
American Chemical Paint Company, Ambler, Pa.

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"Finishing Floor Registers and Grilles at The Auer Register Company,"
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"Finishing Refrigerators with Hot Sprayed Enamel,"
by Frank L. Bonem

"Flock Coating Practices,"
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"Hot Spray Finishing of Machine Tools,"
by Roy W. Hill,
Besly-Welles Corporation

"Hub Caps Plated and Enameled in Conveyorized Setup"

"Plan Your Finishing Facilities and Operations,"
by Thomas J. Menzel,
Jack S. Steele Co., Philadelphia, Pa.

PRODUCTS FINISHING
431 Main Street, Cincinnati 2, Ohio.

NECROLOGY

The Lea Manufacturing Company, Waterbury, Connecticut, has announced with profound sorrow the sudden death on Jaunary 18th of its founder and chairman of the board, **ROBERT S. LEATHER.** President of the company for many years, Bob Leather, as he was known to a host of friends throughout the finishing industry and the metal working field generally, had just left New York with his wife, Laura and friends, Mr. and Mrs. Clyde Carthwaite, for a long Mediterranean cruise. Three days out he had a sudden heart attack and passed away.

Robert S. Leather

Since a young man, beginning shortly after World War I, Mr. Leather had been associated with finishing methods and materials. He was responsible for developing industry's first greaseless composition for finishing metal surfaces and from this came several successful new finishing methods. Mr. Leather had seen The Lea Manufacturing Company grow from a small finishing compound and supply business with a few employees to an organization of four manufacturing plants with distribution all over the world and direct technical service throughout The United States and Canada.

Mr. Leather was one of the original founders and past president of International Fellowship, now Metal Finishing Suppliers' Association. He was also an honorary member of the Waterbury Branch of The American Electroplaters' Society. Always one to whom the spiritual concept was most important, Bob Leather, a Mason, gave a large acreage of his big farm to a Benedictine Order of Nuns and later transferred more land and buildings at nominal cost to establish the Regina Laudis Abbey, Bethlehem, Connecticut.

In his younger days, Mr. Leather took part in many civic activities in and around Waterbury, never failing to respond when asked to head up some civic or charitable project.

Opportunity Section

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Testing—Inspection—Research—Engineers

Consultants and specialists in corrosion, weathering and sunlight testing.

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Circo Equipment Company

Clark Township, Rahway, N. J.

CHEMIST

Prominent manufacturer of complete line of industrial finishes located in NYC. 5 figure salary plus profit sharing for an expert in product development and technical sales. Box No. 22, c/o Products Finishing, 431 Main St., Cincinnati 2, Ohio.

3 Divine automatic straight line polishing machines. One with 6 unit 15 HP. buffing lathes used 9 months. Two with 4-10 H.P. and 2-7½ HP. united, used 2 years and 4 years. All have automatic push button controls, conveyor, belt, drive and all motors and applicators, variable speed controls and starters. Reasonable. Box No. 25, c/o Products Finishing, 431 Main Street, Cincinnati 2, Ohio.

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FINISHING EQUIPMENT

1 Paasche Automatic Aircoating Unit with 72 revolving spindles. Compact unit, 7' long, 3' high. Ideal for parts measuring to 12" dia. Speed range 12 to 24 FPM. Complete with motor, vari-speed drive and adjustable parts holders. Excellent condition.

1 Selas Polymerizing Oven, flat tray type, inside dimensions of tunnel 35 ft. x 40 in. x 12 in. high. Complete with operating motor, variable speed drive mechanism, temperature control, thermal indicator and all safety controls. Has 2 zones, pre-heat with minimum of 200° F. and baking with maximum of 600° F.; also transfer conveyor and lowerator. Extremely low fuel consumption. Excellent condition.

Priced To Sell

CONTACT J. WENICK
LIGHTOLIER INC.

346 Claremont Ave., Jersey City, N. J.

SALES MANAGER WANTED

$12,000 REWARD (plus)

To build up a Products Finishing Department to its full potential.

If you qualify, you can look forward to a rewarding and permanent future.

You will have the backing and full cooperation of a highly rated company.

You must have a practical knowledge of products finishing materials and more than average success in selling them. If you believe that you qualify for this better-than-average opportunity, send us complete information about yourself and your experience. Your letter will be held in strict confidence. Our employees know of this advertisement.

You will be placed in charge of a well established department backed by a very fine laboratory set-up.

Box No. 24, c/o Products Finishing, 431 Main Street, Cincinnati 2, Ohio.

Opportunity Section

FOR SALE

Complete small barrel plating room—two (2) barrels, two (2) rectifiers—degreaser. Ideal for someone wishing to plate their own small parts. Write for list of equipment.

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Cincinnati 13, Ohio

SALESMAN WANTED

Old established manufacturer of complete line of Electroplating and Polishing Equipment and Supplies desires salesman for Chicago and Midwest territory. Excellent opportunity for right man. State age, experience and salary expected. Write Box No. 26, c/o Products Finishing, 431 Main Street, Cincinnati 2, Ohio.

WANTED—Experienced sales executive who can assume full responsibility for Branch Office operation in midwestern city for a nationally recognized manufacturer of electroplating supplies and equipment. Challenging position has unlimited possibilities for capable man who can service established company accounts, direct activities of distributor sales organization and spur development of company prestige. Previous activities in area desirable but not essential. Salary open. Write Box No. 23, c/o Products Finishing, 431 Main St., Cincinnati 2, Ohio. All replies confidential. Our employees know of this advertisement.

FOR SALE

Fostoria Evenray Infrared Oven. 30' long with a 75' cable conveyor. This oven, complete with bulbs, may be seen in use and is available for immediate sale. Model No. 48000, 240 V, 40 Amps, 16 KW, 3 phase, Max. watts per lamp—500, 20 Amps per circuit—3 phase. Write Rajak Mfg. Co., 245 N. 4th Street, Tipp City, Ohio.

Sales Representatives for Industrial Hard Chrome Plating and Black Oxide Finish in the following areas: Indianapolis, Ind.; Louisville, Ky.; Dayton-Springfield, Ohio and Cincinnati. Excellent sideline for men contacting Machine Tool, Metal Stamping, Tool and Die Companies. Good commission. Protected territory. Reply Box No. 27, c/o Products Finishing, 431 Main St., Cincinnati 2, Ohio.

FILM ON SPRAY FINISHING. Spray painters and others interested in spray painting will find a wealth of information in a black and white, sound 16 mm. film, **"MAKING THE MOST OF THE SPRAY PAINTING METHOD,"** which has been produced by the **DeVilbiss Company,** Toledo, Ohio, spray painting equipment manufacturers.

The film, which is a 45 minute feature, illustrates the four basic principles of spray finishing. These are: proper equipment, control factors important to achieve highest quality results, spray painting techniques, and the necessary care, cleaning and maintenance of equipment.

The principal actors in the film portray a maintenance painter, an automobile refinisher and an industrial spray finisher who pursue their trades, but do not always get top quality results. Then the trio is introduced to the DeVilbiss Company spray painting school in Toledo.

In the following scenes, they are given insight into the various aspects of spray painting which cover everything from the right consistency of the material to be used to the actual spray finishing of the product. While at the school, actual working conditions are duplicated for the three painters.

In conjunction with the film, DeVilbiss has prepared a booklet which covers the film highlights and can be used as a ready reference by the spray finisher. The company will distribute the booklets to every person who views the film.

The film may be obtained for showings by writing directly to The DeVilbiss Company, 300 Phillips Avenue, Toledo 1, Ohio. Information about the DeVilbiss spray painting school is also available to those interested.

The Finishing Touch **By J. A. Patterson**

"We are particularly proud of the purity of our plating solutions."

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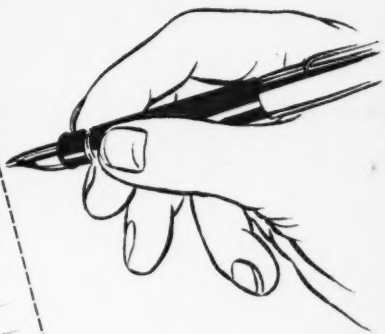

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